



ReBUILD NC

V1.0, November 7, 2019

CDBG-MIT Action Plan

State of North Carolina

For CDBG-MIT Funds

(Public Law 115-123, February 9, 2018 and Public Law 116-20, June 6, 2019)



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Policies and Procedures Revision History

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1.0 Executive Summary

The State of North Carolina is in the unfortunate position of having to respond to two major disaster declarations in quick succession. Hurricane Matthew made landfall in the Carolinas on October 8, 2016. Less than two years later, Hurricane Florence dealt incredible damage to the recovering state when it made landfall on September 14, 2018. The ongoing recovery from Hurricane Matthew was greatly affected, as many areas impacted by Matthew were also impacted by Florence. The Unmet Recovery Needs Assessments and corresponding Action Plans for the Hurricane Matthew and Hurricane Florence recovery delve into the ongoing recovery effort specific to the CDBG-DR allocations for those disasters. Individuals seeking to familiarize themselves with the recovery efforts from those disasters should begin with those reports to understand the full breadth of the ongoing recovery. Topics relevant to CDBG-MIT funding are included in this Mitigation Needs Assessment and Action Plan, although they oftentimes intersect the storm recovery needs.

In Public Law 115-123, The State of North Carolina was allocated \$168,067,000 in Community Development Block Grant – Mitigation (CDBG-MIT) funds. CDBG-MIT is a new funding approach from HUD intended to relieve the repetitive cycle of disaster relief allocations to often-impacted areas of the country. The Federal Register Notice, 84 FR 45838 (the Notice) outlines the requirements and expectations that HUD places on its grantees specific to CDBG-MIT funds.

This Action Plan is the State of North Carolina's plan to use the \$168 million allocation in accordance with the Notice. The administering agency, the North Carolina Office of Recovery and Resiliency (NCORR), an office of the North Carolina Department of Public Safety (NCDPS), will be administering the grant on behalf of the State of North Carolina. References to the HUD grantee and to the State as a decision-making entity are construed to mean NCORR in all instances.

The Action Plan consists primarily of the Mitigation Needs Assessment, an analysis of the specific conditions present in the State which present as a weakness in the disaster recovery cycle. These mitigation needs are placed in context with "Community Lifelines", critical parts of communities that when damaged present a major obstacle to full recovery. The Mitigation Needs Assessment explains what risks are present in the most impacted and distressed (MID) areas affected by Hurricanes Matthew and Florence, which Community Lifeline(s) face the greatest risks, and further develops a foundation to determine which projects would be most effective in mitigating that risk.

The Mitigation Needs Assessment is followed by a review of the long-term planning and risk mitigation considerations, to ensure that the forward-looking aspect of the CDBG-MIT allocation is not lost on temporary solutions to permanent problems. A review of how CDBG-MIT funds may be leveraged with other funds, how the natural infrastructure plays a role in the mitigation plan, and how construction will be monitored and how costs will be controlled are then reviewed in context with the Assessment.

After completing the Mitigation Needs Assessment, NCORR engaged the public and community stakeholders to share a preliminary approach to the use of funds. In three separate public engagements in Robeson County, Edgecombe County, and Craven County, NCORR reviewed the direction the data was pointing and sought feedback on the early approach to the use of funds. Separately, impacted jurisdictions were provided a stakeholder survey and asked for similar feedback about the community's mitigation needs.

In final consideration of the data available from the Mitigation Needs Assessment, ongoing disaster recovery needs, community and stakeholder input, and regulatory requirements, NCORR has determined that a buyout and acquisition program is the most impactful investment in long-term hazard mitigation. In conversations with local communities, this activity must be paired with a resilient affordable housing solution to ensure that individuals that are bought out have a safer place to call home. A small allocation to fund planning activities will allow for excellent plan design, coordination with local and regional entities in plan development, and sufficient public outreach and engagement to drive a plan responsive to the needs of impacted communities.

With the limits of the CDBG-MIT funds, it is NCORR's belief that fewer programs operated at a high level of expertise and efficiency can do more for the long-term mitigation than many approaches which receive significantly less funding. If additional CDBG-MIT funds become available, investment in planning and infrastructure mitigation will be additional concerns for funding.

A summary of allocations is found below:

CDBG-MIT Allocations

| Program | Total | % of Total Allocation | \$ to LMI | % to LMI | \$ to HUD-defined MID areas | % to HUD-defined MID areas |
|--------------------------------------|----------------------|-----------------------|---------------------|------------|-----------------------------|----------------------------|
| Administrative Costs | \$8,403,350 | 5% | \$0 | 0% | \$4,201,675 | 50% |
| Planning Costs | \$8,403,350 | 5% | \$0 | 0% | \$4,201,675 | 50% |
| Strategic Buyout and Acquisition | \$109,243,550 | 65% | \$54,621,775 | 50% | \$54,621,775 | 50% |
| Resilient Affordable Housing Program | \$42,016,750 | 25% | \$42,016,750 | 100% | \$21,008,375 | 50% |
| Total | \$168,067,000 | 100% | \$96,638,525 | 58% | \$84,033,500 | 50% |

The affordable housing component of the plan will be a two-pronged approach. First, NCORR will empower the North Carolina Housing Finance Authority (NCHFA) as a subrecipient to assist in developing new affordable housing stock outside of the floodplain and out of harms ways.

Second, Public Housing Authorities (PHAs) will be subgranted funds to mitigate risks to existing housing developments or to perform one-for-one replacement of units outside of the floodplain.

At all times it is NCORR's primary objective to serve both the greatest identified mitigation need as well as addressing the disaster recovery needs of the citizens of the State. With limited available funds and many needs throughout the State, NCORR supports buyout and acquisition as well as resilient affordable housing as the two best ways to serve the people of North Carolina.

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2.0 Mitigation Needs Assessment

2.1 Background

According to HUD guidance in the Notice, CDBG-MIT funds represent a unique and significant opportunity for grantees to use this assistance in areas impacted by recent disasters to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses. HUD guidance further specifies that CDBG-MIT funds are closely aligned with FEMA funds for a similar purpose, such as the Hazard Mitigation Grant Program (HMGP). To align closely with FEMA guidance and best practices, as well as the CDBG-MIT specific requirements, the State has reviewed the resources required by HUD in the Notice:

- The Federal Emergency Management Agency Local Mitigation Planning Handbook
 - https://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf
- The Department of Homeland Security Office of Infrastructure Protection Fact Sheet
 - <https://www.dhs.gov/sites/default/files/publications/ip-fact-sheet-508.pdf>
- The National Association of Counties, Improving Lifelines: Protecting Critical Infrastructure for Resilient Communities
 - https://www.naco.org/sites/default/files/documents/NACo_ResilientCounties_Lifelines_Nov2014.pdf
- The U.S. Department of Housing and Urban Development CPD Mapping Tool
 - <https://egis.hud.gov/cpdmaps/>

Other resources were supplied by HUD, such as the National Interagency Coordination Center (NICC) for coordinating the mobilization of resources for wildland fire and the U.S. Forest Service's resources around wildland fire. An analysis of wildfire risk was conducted as a part of the Mitigation Needs Assessment (see Part 2 and subsections, below), and these resources were also reviewed in so far as they were applicable to the most urgent mitigation needs facing the most impacted and distressed (MID) areas.

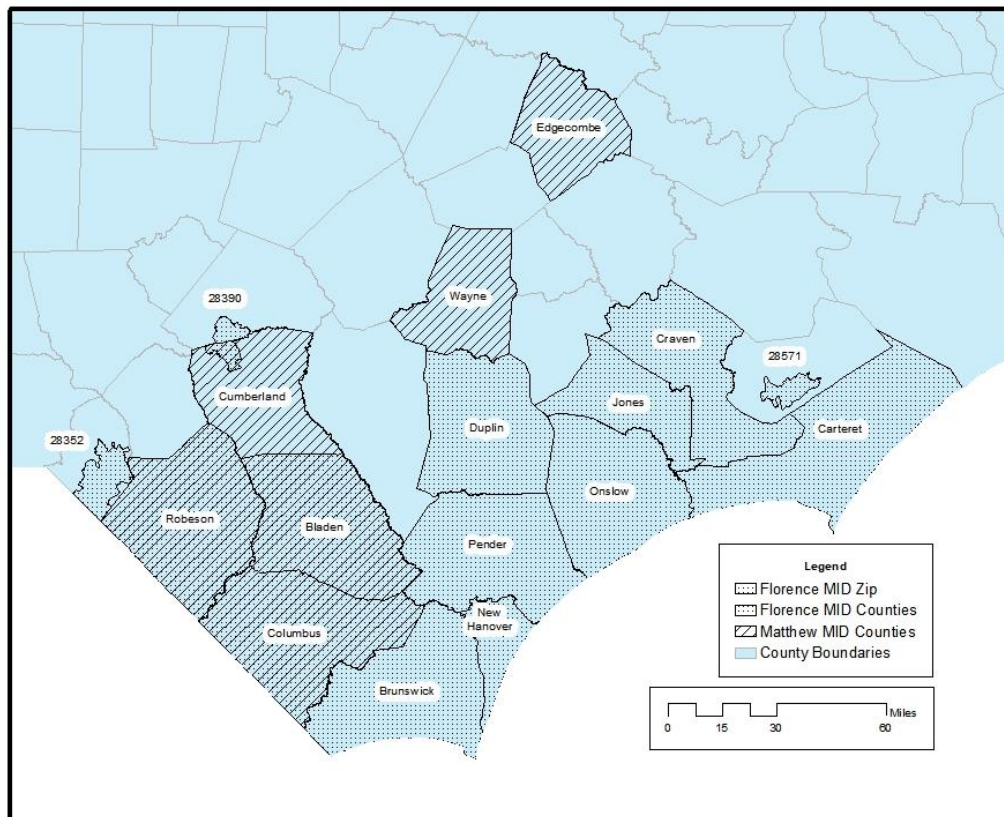
The \$168 million in CDBG-MIT funds allocated in the Notice after appropriations made in Public Law 115-123 are specifically associated with Hurricane Matthew. However, Section V.A.5.b of the Notice permits the State of North Carolina to use the CDBG-MIT funds for the same activities, consistent with the requirements of the CDBG-MIT grant, in the most impacted and distressed areas related to Hurricane Florence. At the time of publication of this Action Plan, HUD had not yet published its identification of the MID areas for Hurricane Florence. However, based on a FEMA and HUD Housing Impact Assessment completed in March 2019, NCORR has adopted the following areas as Florence MID areas. After release of the federal register notice with allocations specified for Florence, NCORR will amend this Action Plan with new

information about the accepted MID areas for Hurricane Florence. The list of MID areas are listed and mapped below:

Table 1 - MID areas, Hurricanes Matthew and Florence

| Hurricane Matthew (DR-4285) | Hurricane Florence (DR-4393) | |
|--|------------------------------|-----------------|
| Bladen* | Bladen* | New Hanover |
| Columbus* | Brunswick | Onslow |
| Cumberland | Carteret | Pender |
| Edgecombe | Columbus* | Robeson* |
| Robeson* | Craven | Zip Code 28571 |
| Wayne | Duplin | Zip Code 28352 |
| | Jones | Zip Code 28390* |
| *Indicates a county declared a MID area for both disasters. Note that Zip Code 28390 is partially shared between both disasters. | | |

Figure 1 - Map of MID Areas, Hurricanes Matthew and Florence



Where data was not available at the Zip Code level, the county level data for that zip code (28571 in Pamlico County, 28352 in Scotland County, and 28390 in Cumberland County) was used instead.

Although the allocation is specific to hurricane recovery, the Notice requires that the application of CDBG-MIT funding assess many types of risks, based on a risk-based Mitigation Needs Assessment. The foundation of the Mitigation Needs Assessment is the State of North Carolina's Hazard Mitigation Plan (HMP) drafted by North Carolina Emergency Management (NCEM), a branch of the North Carolina Department of Public Safety (NCDPS). The HMP is a federally mandated plan that identifies hazards that could potentially affect North Carolina and identifies actions to reduce the loss of life and property from a disaster across the state. The plan is required to have the following components as mandated in the Disaster Mitigation Act of 2000: Planning Process, Risk Assessment, Mitigation Strategies, Coordination of Local Plans; Plan Maintenance; and Plan Adoption and Assurances. All of the requirements for each section are further defined in the 44 CFR §201.4, the Federal Emergency Management Agency (FEMA) State Plan Review Guide and the FEMA State Plan Review Tool.¹

The State of North Carolina benefits from an Enhanced Hazard Mitigation Plan. An enhanced status is a designation from FEMA given to State or Tribal governments that demonstrate that they have developed a comprehensive mitigation program and can manage increased funding to achieve its mitigation goals. Ordinarily, states are provided an additional 15 percent of the total disaster allocation from FEMA in Hazard Mitigation Grant Program (HMGP) funding. Following a disaster declaration, states and tribes with Enhanced HMPs may receive additional funding through the HMGP, up to 20 percent of the disaster allocation. Currently North Carolina is one of only 11 States that have a designated Enhanced Plan.²

The Mitigation Needs Assessment will therefore consider the State's Enhanced HMP as it relates to the Most Impacted and Distressed (MID) areas affected by both Hurricane's Matthew and Florence. While the Mitigation Needs Assessment acknowledges the many hazards faced by the people and property in the State of North Carolina, the focus will remain on risks which can be mitigated with the resources available and only in those areas determined by HUD or by the State to be MID areas.

In the Mitigation Needs Assessment, the terms "hazard", "risk", and "mitigation" are commonly used. Often the terms disaster, hazard, and risk are used interchangeably. For the purpose of this Assessment, a hazard is defined as the potential for harm (such as a disaster) to occur.³ A "natural hazard" is a source of harm or difficulty created by a meteorological, environmental, or

¹ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 1-1.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

² Federal Emergency Management Agency. *Hazard Mitigation Planning Frequently Asked Questions*.

<https://www.fema.gov/hazard-mitigation-planning-frequently-asked-questions>.

³ Pearce, Laurence Dominique Renee. *An Integrated Approach for Community Hazard, Impact, Risk and Vulnerability Analysis: HIRV*. Doctoral Dissertation, University of British Columbia, 2000.

geological event.⁴ A hazard is not the disaster itself, but the possibility of the disaster. Risk is the exposure of something of value to a hazard and is a function of probability and the magnitude of the potential loss.⁵

Generally a hazard cannot be removed from the environment – floods and hurricanes will continue to happen regardless of human intervention and planning – however, the risk posed by the hazard is addressed by limiting the exposure of human value by either reducing the probability of loss or the magnitude of the loss. Mitigation in this context therefore refers to any action taken to reduce risk.

2.2 Method

Guidance issued in the Notice specifies how to approach the Mitigation Needs Assessment. In addition to the mitigation needs identified in the State’s Enhanced HMP, the characteristics and impacts of current and future hazards identified through the recovery of Hurricane Matthew and Hurricane Florence are also a major factor in assessing the mitigation need. However, focusing on past events alone provides an incomplete understanding of the true risk to the State of North Carolina and its people created by hazard conditions.

The Mitigation Needs Assessment seeks to combine the institutional knowledge contained in the HMP, lessons learned from previous disaster recovery (specifically Hurricane Matthew and Florence recovery efforts), and the local knowledge from citizens and stakeholders in disaster-impacted areas. These three sources are the primary source of hazard, risk, and mitigation information for the Mitigation Needs Assessment.

For each of the three primary sources contributing to the Mitigation Needs Assessment, the risks are quantitatively assessed according to their potential impacts on seven critical service areas, also known as the Community Lifelines, identified in V.A.2.a.(1). of the Notice:

1. Safety and Security
2. Communications
3. Food, Water, Sheltering
4. Transportation
5. Health and Medical
6. Hazardous Material (Management)
7. Energy (Power and Fuel)

⁴ Federal Emergency Management Agency. *Local Mitigation Planning Handbook*. 5-1. https://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf

⁵ Smith, Keith. *Environmental Hazards: Assessing Risk and Reducing Disaster*. London and NY: Routledge, 1996.

The outcome of the process is the comparison of relative risk to the seven critical service areas by hazard type to inform a mitigation approach using CDBG-MIT funds in the most effective way possible. An important product of this exercise is a risk assessment that assigns values to risks for the purpose informing priorities, developing or comparing courses of action, and informing decision making in the CDBG-MIT context.⁴ After assessing the risks to the Community Lifelines, appropriate mitigation approaches are reviewed.

The Mitigation Needs Assessment is a snapshot in time of the current mitigation needs, and subject to change as shifting priorities and risks are discovered by the State. As new risks are identified, or as previously-identified risks are sufficiently mitigated, the State will update the Assessment as needed.

2.3 State Enhanced Hazard Mitigation Plan

The HMP identifies many hazards for the State of North Carolina. The HMP categorizes the identified hazards between natural hazards and technological hazards. Further sub classifications include manmade hazards, public health hazards, and agricultural hazards.

The hazards in the HMP were identified by a working group of subject matter experts (SME) from across state agencies, academia, and the private sector. For the 2018 update of the HMP, previous versions of the list of potential hazards was reviewed and discussed in detail in coordination with the Emergency Management Accreditation Program (EMAP) working group which is made up of representatives from each branch of NCEM. It was then presented to the Risk Management Coordinating Council as the official list of hazards pending any additional input and/or comments. There was not any additional input or comments received, therefore it was deemed to be the official list to include in the HMP.⁶

Table 2 - HMP Identified Hazards

| Natural Hazards | Technological Hazards |
|--------------------------------|---|
| Flooding | Hazardous Substances |
| Hurricanes and Coastal Hazards | Hazardous Materials |
| Severe Winter Weather | Hazardous Chemicals |
| Excessive Heat | Oil Spill |
| Earthquakes | Radiological Emergency - Fixed Nuclear Facilities |
| Wildfires | Terrorism |
| Dam Failures | Chemical |

⁶ North Carolina Department of Public Safety. 2018 State Hazard Mitigation Plan, 3-2.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

| Natural Hazards | Technological Hazards |
|---------------------------|-----------------------|
| Drought | Biological |
| Tornadoes/Thunderstorms | Radiological |
| Geological | Nuclear |
| Landslides/Rock Fall | Explosive |
| Sinkholes/Coastal Erosion | Cyber |
| Infectious Disease | Electromagnetic Pulse |

These identified hazards are applicable to the entire state. NCORR understands that the hazards present in non-impacted areas of the state, such as earthquakes and geological hazards, pose significant threat to life and property where they are more commonplace. However, with the limited funds available, and consistent with HUD guidance, the analysis of risks in the Mitigation Needs Assessment will primarily focus on the geographic extent of the MID areas for Hurricane Matthew and Florence and even further focus on mitigating the principal hazards present or worsened by the disaster events.

The HMP goes on to catalog each hazard to include a description, extent (as defined by FEMA), location, hazard history, changing future conditions, impact, future probability, and Emergency Operation Plan reference. The Mitigation Needs Assessment will not reiterate all sections of the HMP for all hazards, but the full Plan is available at <https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

The HMP is informed by 23 regional plans. The MID areas account for 10 of these plans. The breakdown of regional HMPs, their approval dates, expiration dates, and participating MID area are below.

Table 3 - Regional HMP and MID areas

| Plan | Plan Approved | Plan Expiration | Participating MID |
|------------------------------|---------------|-----------------|-------------------|
| Pamlico Sound Regional HMP | 6/12/2016 | 6/11/2020 | Carteret |
| | | | Craven |
| | | | Pamlico |
| Southeastern NC Regional HMP | 4/26/2016 | 4/25/2021 | Brunswick |
| | | | New Hanover |
| | | | Pender |
| Bladen-Columbus Regional HMP | 7/14/2015 | 7/13/2020 | Bladen |

| Plan | Plan Approved | Plan Expiration | Participating MID |
|---|---------------|-----------------|-------------------|
| | | | Columbus |
| Neuse River Basin Regional Multi-Jurisdictional HMP | 2/25/2016 | 6/21/2020 | Jones |
| | | | Wayne |
| Cumberland-Hoke Regional HMP | 6/28/2016 | 6/27/2021 | Cumberland |
| Nash-Edgecombe-Wilson Regional HMP | 8/13/2015 | 8/12/2020 | Edgecombe |
| Onslow County Multi-Jurisdictional Plan Update | 9/2/2015 | 9/1/2020 | Onslow |
| Pee Dee Lumber Regional HMP | 3/23/2018 | 3/22/2023 | Scotland |
| Robeson County Multi-Jurisdictional Plan Update | 5/11/2017 | 5/10/2022 | Robeson |
| Sampson-Duplin Regional HMP | 4/12/2016 | 4/11/2021 | Duplin |

At the time of this Mitigation Needs Assessment, the regional plans for MID areas are statutorily up to date. However, changing conditions in the State since their publication – in some instances two or more major storms have occurred since publication, including Hurricanes Matthew and Florence – change the understanding that the regional HMP are up to date with expected risks and hazards present for the MID areas. It is in this context that the regional plans are reviewed for applicability and to fill knowledge gaps in the State HMP.

To first determine the applicability of the hazard to the Mitigation Needs Assessment, the risk is assessed using the probability and severity method reviewed at the end of Section 2.2 above.

2.3.1 Definitions

To align with the HMP, this Mitigation Needs Assessment will adopt the definitions found in the HMP for the disasters specified in Part 2.3 above.

2.3.1.1 Flooding

The HMP defines flooding as a localized hazard that generally results from excessive precipitation. Floods are generally considered to fall in one of two categories: flash floods, which are the product of heavy localized precipitation that occurs within a short period of time at a given location; and general floods, caused by precipitation that occurs during a longer period of time over a particular river basin.

In addition to the two flood categories, there are three types of flooding based on the flood conditions and environment. Riverine flooding is a function of precipitation levels and water runoff volumes within the watershed of the stream or river. Coastal flooding is typically a result of storm surge, wind-driven waves, and heavy rainfall. These conditions are produced by tropical systems during the summer and fall, and nor'easters and other large coastal storms during the winter and spring. Generally it is difficult to discuss coastal flooding separate from coastal hazards, such as hurricanes, and so often these hazards are discussed together. Finally

urban flooding occurs where there has been development within stream floodplains or in coastal areas where there are high levels of development. Urban flooding is worsened by the development of impermeable surfaces such as roadways, pavement, and buildings.

Flooding is the most common environmental hazard to affect the United States, due to the widespread geographical distribution of river valleys and coastal areas, and the attraction of human settlements in these areas. Most recent presidential declarations concerning major disaster have been associated with flash floods and general flooding.⁷ Both the Hurricane Matthew and Hurricane Florence allocations are associated with flooding, as well as Hurricanes and Coastal Storms (to be discussed later).

According to the North Carolina Floodplain Mapping Program, the amount of land in the floodplain in North Carolina accounts for about 18.2 percent of the total land area in the state. The North Carolina Floodplain Mapping Program is currently in the process of developing and updating digital flood hazard data for the State's 100 counties.

2.3.1.2 Hurricanes and Coastal Hazards

Hurricanes are cyclonic storms that originate in tropical ocean waters poleward of about 5 degrees latitude. Hurricanes are heat engines, fueled by the release of latent heat that results from the condensation of warm water. Their formation requires several elements, including: a low-pressure disturbance; sufficiently warm sea surface temperature; rotational force caused by the spinning of the earth; and the absence of wind shear in the lowest 50,000 feet of the atmosphere. Hurricanes can produce an array of hazardous weather conditions, including storm surge, high winds, torrential rain, and tornadoes.

Hurricanes have the greatest potential to inflict damage as they move from the ocean and cross the coastline. The crossing of the center of the storm's eye is called landfall. Because hurricanes derive their strength from warm ocean waters, hurricanes are generally subject to deterioration once they make landfall. The forward momentum of a hurricane can vary from just a few miles per hour to up to 40 mph. This forward motion (combined with a counterclockwise surface flow) makes the hurricane's right-front quadrant the location of its most potentially damaging winds.⁸

2.3.1.3 Severe Winter Weather

The winter storms that typically impact North Carolina generally form in the Gulf of Mexico or off the southeast Atlantic Coast. The entire state has a likelihood of experiencing severe winter weather. The threat varies by location and by type of storm. Coastal areas typically face their greatest weather threat from nor'easters and other severe winter coastal storms. These storms

⁷ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-5.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

⁸ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-17.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

can contain strong waves and result in extensive beach erosion and flooding. Freezing rain and ice storms typically occur once every several years at coastal locations and severe snowstorms have been recorded occasionally in coastal areas.⁹

2.3.1.4 Excessive Heat

Excessive heat is a dangerous and deadly occurrence in North Carolina. According to the National Weather Service, heat is one of the leading weather-related causes of loss of life in the United States.¹⁰ The Centers for Disease Control and Prevention indicates that 618 people in the United States are killed by extreme heat every year.¹¹ Also, according to the CDC, that number represents more deaths than hurricanes, lightning, tornadoes, earthquakes and floods combined.¹² The CDC defines extreme heat as “summertime temperatures that are much hotter and/or humid than average.” The National Weather Service defines a heat wave as “a period of abnormally and uncomfortably hot and unusually humid weather, typically lasting two or more days.”¹³

2.3.1.5 Earthquakes

An earthquake is a vibration or shaking of Earth’s surface due to an underground release of energy. They can be caused by various conditions, such as sudden movements along geological faults or volcanic activity. Earthquake magnitudes, or severity, are recorded on the Richter scale with seismographs. Some may be so small that they are virtually unnoticed, while others can destroy entire cities. Seismology, the study of earthquakes, helps scientists understand what areas are more prone to experiencing earthquakes, such as along the Ring of Fire; however, earthquakes are generally unpredictable.

Since 1735, North Carolina has experienced 23 earthquakes, each of which caused at least architectural damage. From historical data, scientists from the U.S. Geological Survey (USGS) and several university research centers have produced maps that project the expected ground motion for various return periods. The last recorded damaging earthquake in which the epicenter was located in North Carolina occurred in the vicinity of the Town of Hendersonville in 1985. The epicenter for the last recorded damaging event that affected the state was in Virginia in 2011.¹⁴

⁹ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-34.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

¹⁰ National Oceanic and Atmospheric Administration: National Weather Service. *Heat Safety Tips and Resources*.

<http://www.nws.noaa.gov/os/heat/>

¹¹ Centers for Disease Control and Prevention. *Natural Disasters and Severe Weather*.

https://www.cdc.gov/disasters/extremeheat/heat_guide.html

¹² Centers for Disease Control and Prevention. *Extreme Heat*. <https://www.weather.gov/images/rah/heat/CDCInfographic.jpg>

¹³ National Oceanic and Atmospheric Administration: National Weather Service. *Historic Heat Waves in the Carolinas*.

<http://www.weather.gov/ilm/heatwaves>

¹⁴ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-50.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

2.3.1.6 Wildfires

A wildfire is an uncontrolled burning of grasslands, brush or woodlands. The potential for wildfire depends upon surface fuel characteristics, recent climate conditions, current meteorological conditions, and fire behavior. Hot, dry summers and dry vegetation increase susceptibility to fire in the fall—a particularly dangerous time of year for wildfire.

Southern forest landscapes have had a long history of wildfire. Wildfires have taken place as a natural process for many thousands of years, playing an important role in the ecological integrity of our natural environment. Human settlement has significantly influenced changes in the spatial and temporal pattern of wildfire occurrence, as well as the risks associated with them for human life and property.¹⁵

2.3.1.7 Dam Failures

Dams store water in reservoirs during times of excess flow, so that water can be released from the reservoir during other times, when natural flows are inadequate to meet the needs of water users.¹⁶ Dams can pose risks to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing the loss of life and considerable property damage if there are people located downstream from the dam.¹⁷ Many dam failures have resulted because of an inability to safely pass flood flows. Failures caused by hydrologic conditions can range from sudden (with complete breaching or collapse), to gradual (with progressive erosion and partial breaching). The most common modes of failure associated with hydrologic conditions include overtopping, the erosion of earth spillways, and overstressing the dam or its structural components.¹⁸

Like all built structures, dams deteriorate. Lack of maintenance causes dams to be more susceptible to failure. Often, the corrugated piping used in dam construction has a shorter life span than the dam itself, involving expensive replacement to avoid potential dam weakening. In the United States since 2000, more than 600 dam incidents, (including 70 dam failures) were reported to the National Performance of Dams Program, which collects and archives information on dam performance as reported by state and federal regulatory agencies and dam owners. Dam incidents are events (such as large floods, earthquakes or inspections) that alert dam safety engineers to deficiencies that threaten the safety of a dam. Due to limited state staff, many incidents are not reported, and therefore the actual number of incidents is likely to be much higher.

¹⁵ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-62.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20Adopted.pdf>.

¹⁶ National Drought Mitigation Center: University of Nebraska. *Storing and Moving Water*.

<http://drought.unl.edu/DroughtforKids/HowCanWeProtectOurselves/StoringandMovingWater.aspx>

¹⁷ Federal Emergency Management Agency. *Dams Sector: Crisis Management Overview Course*.

<https://emilms.fema.gov/ISO870a/DCM01summary.htm>

¹⁸ Federal Emergency Management Agency. *Federal Guidelines for Dam Safety: Selecting and Accommodating Inflow Design Floods for Dams*. <https://www.ferc.gov/industries/hydropower/safety/guidelines/fema-94.pdf>

Communities continue to develop along the state's rivers, many in potential dam-failure inundation zones. Further exacerbating the potential risk to citizens is the disrepair of many dams and the lack of sound plans to help guide necessary repairs and warning systems to alert the public in the event of a dam failure.¹⁹

2.3.1.8 Drought

Drought refers to an extended period of deficient rainfall relative to the statistical mean established for a region. Drought can be defined according to meteorological, hydrological, and agricultural criteria. Meteorological drought uses long-term precipitation data to measure present precipitation levels against departures from normal precipitation levels. Hydrological drought is defined by surface and subsurface water supply deficiencies based on stream flow, lake, reservoir, and ground water levels. Agricultural drought occurs when there is insufficient soil moisture to satisfy the water budget of a specific crop, leading to destroyed or underdeveloped crops with greatly depleted yields.

A drought is a prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. High temperatures, high winds, and low humidity can worsen drought conditions and make areas more susceptible to wildfire. Human demands and actions have the ability to hasten or mitigate drought-related impacts on local communities.²⁰

2.3.1.9 Tornadoes/Thunderstorms

A tornado is a violently rotating column of air in contact with the ground and extending from the base of a thunderstorm. A condensation funnel does not need to reach to the ground for a tornado to be present; a debris cloud beneath a thunderstorm is all that is needed to confirm the presence of a tornado, even in the total absence of a condensation funnel.

It is spawned by a thunderstorm (or sometimes as a result of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris.

Thunderstorms can produce a variety of accompanying hazards including wind, hail, and lightning. Although thunderstorms generally affect a small area, they are very dangerous and may cause substantial property damage.²¹

¹⁹ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-73.
<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

²⁰ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-77.
<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

²¹ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-88.
<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

2.3.1.10 Geological Hazards

The HMP divides Geological Hazards into several subcategories – Landslides, sinkholes, and coastal erosion. A landslide is a downward movement of earth or rock from, driven by gravity. Landslides can be triggered by natural or man-made circumstances, such as heavy rains, earthquakes, rapid snow melt, erosion, or construction.

A sinkhole is an area of ground that has no natural external surface drainage--when it rains, all of the water stays inside the sinkhole and typically drains into the subsurface. Sinkholes can vary from a few feet to hundreds of acres and from less than 1 to more than 100 feet deep. Some are shaped like shallow bowls or saucers whereas others have vertical walls. Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces just get too big. If there is not enough support for the land above the spaces then a sudden collapse of the land surface can occur.

Coastal or beach erosion is the wearing away of the beach and dune sediments due to winds, tidal currents, or wave action. Erosion is typically event-driven and tends to happen during periods of strong winds, high tides and waves, such as a storm; however, continued erosion wears away the coastal profile and can create imbalance on shorelines. An eroding beach may lose feet of sand per year. Erosion clearly affects the environment, but it also is problematic for homes and businesses that are constructed on or near beaches. Severe erosion can cause extreme property loss or damages. Many beaches rely on sandbags to be placed in front of homes and dunes to protect them from falling into the ocean.²²

2.3.1.11 Hazardous Substance

The HMP defines a hazardous substance as any element, chemical, substance, compound, mixture, agent, solution or substance that an accidental or deliberate release of may cause disease or harm to human health and the environment. Hazardous substances may have one or more of the following intrinsic properties: explosiveness, flammability, ability to oxidize (or accelerate a fire), human toxicity, or corrosiveness. Hazardous materials are found in many different forms and quantities that can potentially cause property damage, injuries, long-lasting health effects, and death. Many of these materials are used and stored on a daily basis in homes and businesses, and transported through major highways, waterways, pipelines, and railways. Each hazard has a different threshold level and can be naturally occurring, which creates many risks in the event of an emergency.

Hazardous material (HAZMAT) incidents consist of solid, liquid and/or gaseous contaminants that can occur at fixed facilities or mobile sources. Many HAZMAT emergencies result from

²² North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-105.
<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

accidents or negligent behavior, but some may be purposefully designed, such as a terror attack. These incidents can be acute or long-lasting and can cause fires or explosions, potentially affecting vast populations of people and wildlife.²³

2.3.1.12 Radiological Emergency – Fixed Nuclear Facility

A nuclear and radiation accident is defined by the International Atomic Energy Agency as “an event that has led to significant consequences to people, the environment or the facility. Often, this type of incident results from damage to the reactor core of a nuclear power plant, which can release radioactivity into the environment. The degree of exposure from nuclear accidents has varied from serious to catastrophic.”²⁴

2.3.1.13 Terrorism

Terrorism is defined in the United States by the Code of Federal Regulations is “the unlawful use of force or violence against persons or property to intimidate or coerce a government, civilian population, or any segment thereof, in furtherance of political or social objectives.” Terrorist acts may include assassinations, kidnappings, hijackings, bombings, small arms attacks, vehicle ramming attacks, edged weapon attacks, incendiary attacks, cyber-attacks (computer based), and the use of chemical, biological, nuclear and radiological weapons. Historically the main categories of weapons of mass destruction (WMDs) used in terror attacks are Chemical, Biological, Radiological, Nuclear, and Explosive (collectively referred to as CBRNE).²⁵

2.3.1.14 Other Hazards

The HMP includes other hazards, such as cyber hazards, electromagnetic pulses, and infectious diseases. These hazards either indirectly affect the built environment or are not well mitigated using the conventional mitigation techniques used by the HMGP. To greater align with FEMA HMGP, these hazards are not included in the Mitigation Needs Assessment. Greater detail on these hazards remains available in the HMP.

2.3.2 Highly Likely Hazards

The HMP includes maps and analysis of future probability based on past events. The HMP divides hazards into three broad groups of probability – Highly Likely, Likely, and Unlikely to occur. Each of these categories is defined below in context with the MID area. Note that the HMP description of probability is qualitative, primarily based on historical hazard data.

²³ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-129.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

²⁴ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-132.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

²⁵ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-148.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

To determine whether the hazard was present in the MID areas, the spatial data included in the HMP was visually reviewed to determine overlap with the impacted areas. In consideration of future changing conditions, the hazard probability is re-assessed based on anticipated changes in climate, sea level rise, and other environmental and social factors. The Mitigation Needs Assessment adopts the three hazard probability categories, but does not necessarily match the categories in the HMP in every instance.

Table 4 - Hazard probability, MID areas

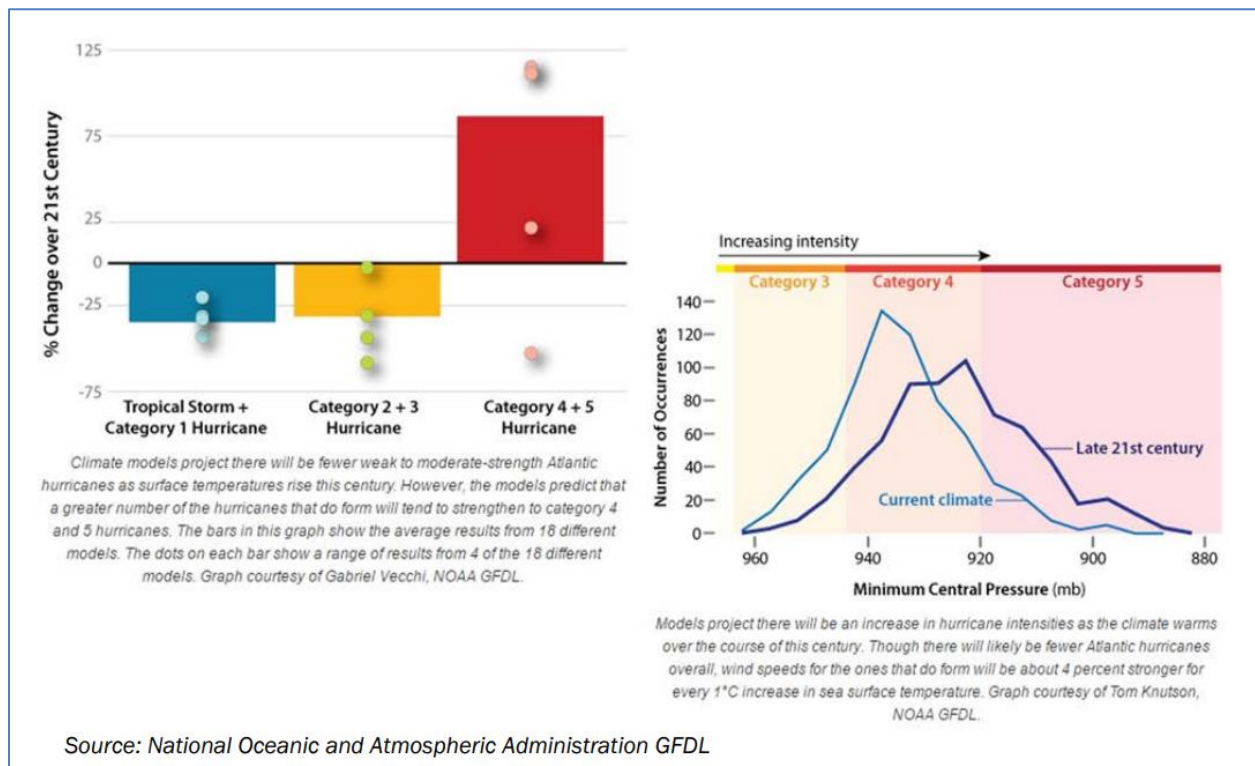
| Probability | Hazard |
|---------------|--------------------------------|
| Highly Likely | Flooding |
| | Hurricanes and Coastal Hazards |
| | Tornadoes/Thunderstorms |
| Likely | Hazardous Substances |
| | Excessive Heat |
| | Wildfires |
| | Drought |
| Unlikely | Severe Winter Weather |
| | Earthquakes |
| | Dam Failures |
| | Geological Hazards |
| | Radiological Emergencies |
| | Terrorism |

The first group of hazards are those that are determined to be Highly Likely. Hazards that are determined to be Highly Likely are defined in the HMP as having a 66.7 percent to 100 percent chance of disaster occurrence within a given year. The Highly Likely hazards within the MID areas are flooding, hurricanes and coastal hazards, and tornadoes/thunderstorms. The HMP rates flooding and tornadoes/thunderstorms as Highly Likely events, while hurricanes and coastal hazards are described as Likely.

In the Mitigation Needs Assessment, hurricanes and coastal hazards are elevated to Highly Likely for the following reasons. First, at the time of completion of the 2018 HMP, Hurricane Florence had not yet struck North Carolina. With two major storms making landfall in less than two years, and with the coastal impacts of Hurricane Dorian felt during the time of the development of this Mitigation Needs Assessment less than a year after Hurricane Florence, it is evident that coastal hazards warrant additional attention and scrutiny in this Mitigation Needs Assessment.

Additionally, the HMP indicates that changing climate and weather conditions may increase the number and frequency of future hurricane events that impact the State. According to the U.S. Government Accountability Office, national storm losses from changing frequency and intensity of storms are projected to increase anywhere from \$4-6 billion in the near future. National Oceanic and Atmospheric Administration (NOAA) reports support that weather extremes will likely cause more frequent, stronger storms in the future due to rising surface temperatures.²⁶

Figure 2 - NOAA Climate Models Projection for Future Hurricanes



2.3.3 Likely Hazards

Likely hazards are those that have a 33.4 percent to 66.6 percent chance of disaster occurrence in a given year. The Likely hazards in the MID areas are hazardous materials, excessive heat, wildfires, and drought.

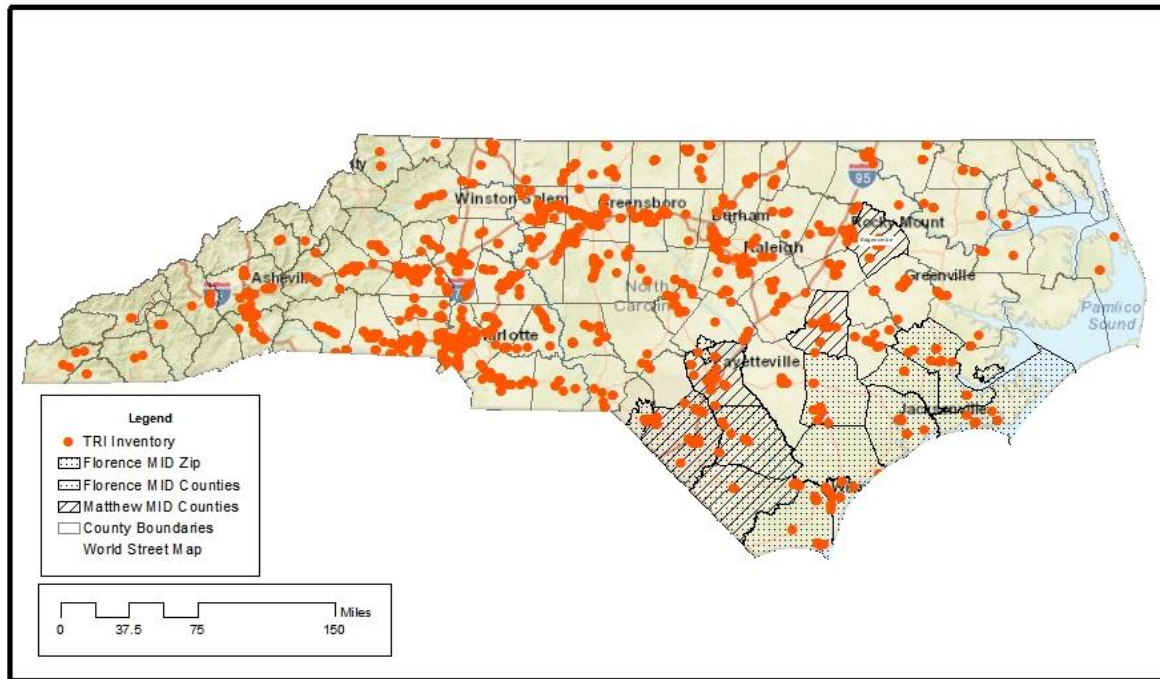
The probability of a hazardous material related incident statewide is considered Highly Likely. It's important to note that a hazardous material incident may be minor, but the incidence rate is still comparatively high compared to other more serious disasters. Hazardous Materials disasters are more closely tied with infrastructure development such as roads and bridges where shipments of hazardous materials occur. The majority of fixed HAZMAT locations, cataloged in the Toxic Release Inventory (TRI) maintained by the Environmental Protection

²⁶ North Carolina Department of Public Safety. 2018 State Hazard Mitigation Plan, 3-32.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>

Agency (EPA), are located in central and western North Carolina, removed from the MID areas. Therefore, the probability associated with a hazardous materials incident in the MID areas is reduced to Likely rather than Highly Likely.

Figure 3 - Concentration of TRI Sites, NC



The next three Likely hazards, excessive heat, wildfire, and drought, are related to climate. The HMP includes excessive heat and drought in the Unlikely hazard category. However, as reviewed earlier, the HMP primarily considers past events. Research from NASA suggests that future droughts and heat waves (periods of abnormally hot weather lasting days to weeks) everywhere are projected to become more intense, while cold waves become less intense. Summer temperatures are projected to continue rising, and a reduction of soil moisture, which exacerbates heat waves, is projected for much of the western and central U.S. in summer. By the end of this century, what have been once-in-20-year extreme heat days (one-day events) are projected to occur every two or three years over most of the nation.²⁷ Therefore, in consideration of changing future conditions, the likelihood of an impact from excessive heat and drought are elevated to Likely.

Wildfires are considered to be Likely in the HMP, and the Mitigation Needs Assessment adopts this classification. This is further corroborated by the number of wildfires during unusual dry periods in the Hurricane Matthew and Florence MID areas. The changing climate conditions leading to increased drought and excessive heat have the same worsening effect on wildfires in the MID areas, which are already more prone to wildfire events.

²⁷ NASA. *Global Climate Change: Vital Signs of the Planet*. <https://climate.nasa.gov/effects/>

Figure 4 - Wildfires in NC, 1998-2017²⁸

| County | Wildfires, 1998 - 2017 |
|-------------------|------------------------|
| Bladen* | 2 |
| Brunswick* | 4 |
| McDowell | 2 |
| New Hanover* | 2 |
| Pender* | 6 |
| Robeson* | 2 |
| Rutherford | 2 |
| Swain | 2 |
| Other (Statewide) | 10 |
| * MID Area | |

2.3.4 Unlikely Hazards

Many hazards are present statewide that do not manifest regularly in the MID areas. These hazards are determined to be Unlikely for the MID areas, with a chance of a disaster from these hazards between 1 percent and 33.3 percent in a given year. Unlikely hazards include severe winter weather, earthquakes, dam failures, geological hazards, radiological emergencies, and terrorism (including cyber-crime and electromagnetic pulses).

Severe winter weather is categorized by the HMP as a Likely hazard statewide. However, since 1996, many of the MID counties (Brunswick County, Columbus County, Robeson County, New Hanover County, Pender County, and Bladen County) experienced fewer than 10 winter weather events. Severe winter weather is more significant in the western area of the state, such as Avery and Mitchell Counties.²⁹ Compounded with the climatological considerations discussed for excessive heat, drought, and wildfire in Part 2.3.3 above, continued severe winter weather events in the MID areas is considered Unlikely.

The propensity for earthquakes is concentrated in the western area of the State. A low risk earthquake hazard exists in the MID areas, and the time horizon for earthquake hazards is extremely long compared to other hazards statewide. In a 50-year time horizon, there is a two percent chance of an earthquake reaching 8-10 percent gravity for a portion of the MID area. An earthquake of that intensity would have moderate to strong perceived shaking and very

²⁸ NOAA: National Centers for Environmental Information. *Wildfires by County, Total from 1998 to 2017*.

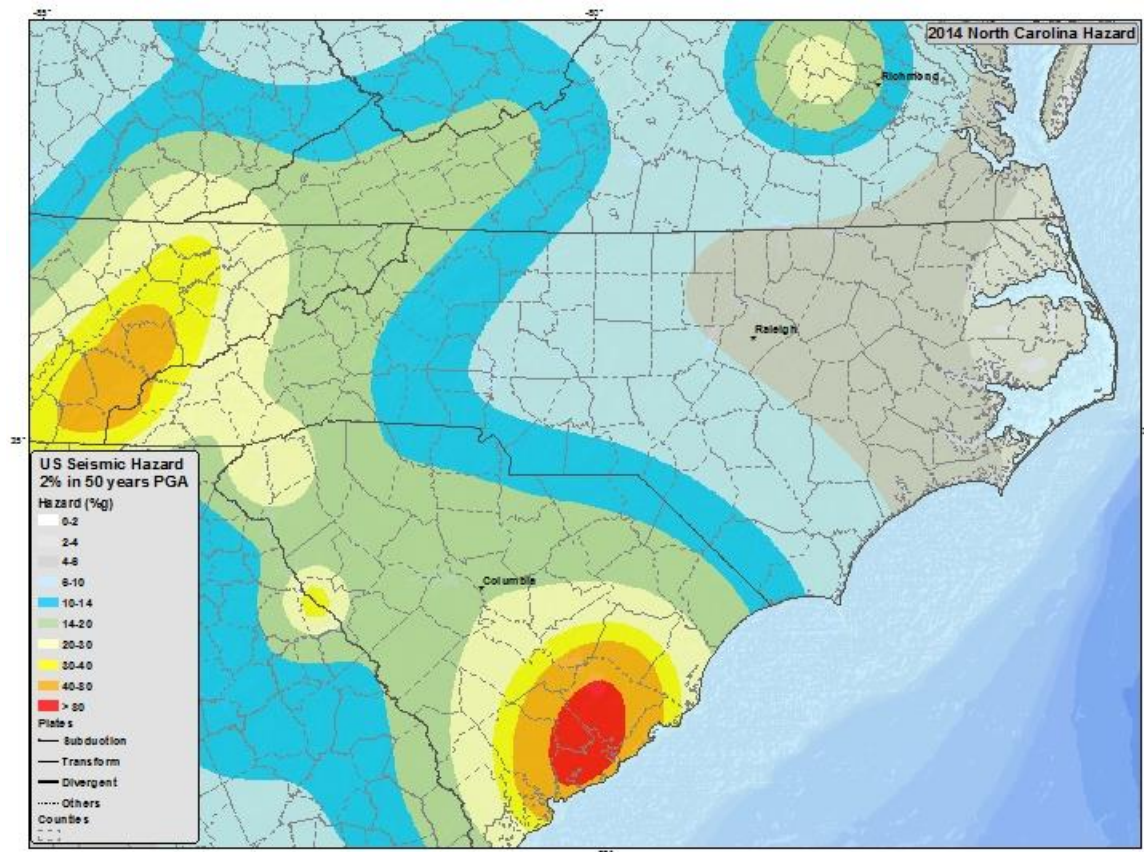
<https://www.ncdc.noaa.gov/sotc/fire/201713>

²⁹ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-36.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20A%20Adopted.pdf>.

light to light damage. Adjacent areas are slightly more risk prone and the more north eastern areas are significantly less risk prone.³⁰

Figure 5 - Earthquake hazard, statewide



Dam failure is a complex issue facing the aging dams in place throughout North Carolina. There are more than 5,600 dams in North Carolina. 1,445 of those dams are considered high hazard that could present a risk to public safety and property if a dam failure were to occur. High hazard dams are up from 874 in 1998, indicating that dam failure is a worsening issue for the State.³¹ Currently, the greatest number of high hazard dams are found outside of the MID areas in Wake, Mecklenburg, Guilford, Forsyth, and Moore Counties.³² A total of 103 high hazard dams are located in the MID areas, accounting for 7.12 percent of all high hazard dams in the State.

³⁰ United States Geologic Survey. *Information by Region – North Carolina. 2014 Seismic Hazard Map.*

<https://earthquake.usgs.gov/earthquakes/byregion/northcarolina-haz.php>

³¹ North Carolina Department of Public Safety. *2018 State Hazard Mitigation Plan*, 3-75.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>

³² North Carolina Department of Environmental Quality: Dam Safety. *N.C. Dam Inventory as of 7/16/18.*

<https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permits/dam-safety>

Table 5 - High Hazard Dams, MID areas

| MID Area | # of High Hazard Dams | MID Area | # of High Hazard Dams |
|------------|-----------------------|--------------------|-----------------------|
| Cumberland | 54 | Edgecombe | 2 |
| Wayne | 15 | New Hanover | 2 |
| Duplin | 7 | Robeson | 2 |
| Columbus | 5 | Carteret | 1 |
| Brunswick | 4 | Craven | 1 |
| Bladen | 3 | Jones | 1 |
| Onslow | 3 | Total | 103 |
| Scotland | 3 | Rest of State | 1,342 |
| | | Grand Total | 1,445 |

Geological hazards are present statewide, but landslides and sinkholes are predominately located outside of the MID areas. Coastal erosion, however, is worth noting in the MID areas as natural processes are exacerbated by sea level rise, potentially worsening or adding unpredictability to the coast of the State. Although the conditions for coastal erosion may be changing, the timescale for a coastal erosion event remains of such significant length that a disaster occurring from coastal erosion remains highly unlikely. According to the HMP, Carteret and New Hanover counties may be most susceptible to coastal erosion compared to other MID areas.³³

The remaining unlikely hazards, radiological emergencies and terrorism, are more closely tied with population than environmental factors. There is only one nuclear facility within the MID area, the Brunswick Nuclear Plant in Southport, North Carolina, on the Cape Fear River. If there were a nuclear emergency, the areas surrounding this plant would be exposed to potentially dangerous radiation levels. However, the State has no history of major radiological emergencies. While the increasing population near the Brunswick Nuclear Plant may increase the *severity* of a radiological emergency, it does not affect the probability of such an emergency.

Terrorism is most tied to population centers. It is difficult to anticipate a terrorist attack, but there is no particular expectation of increased terrorism in the MID areas, and these areas share the same classification as the rest of the state as a highly unlikely disaster.

³³ North Carolina Department of Public Safety. 2018 *State Hazard Mitigation Plan*, 3-111.
<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20A%20Adopted.pdf>.

2.3.5 Severity

The severity of a potential disaster is the amount of damage dealt to people and property during a potential disaster event. While probability assessments seek to answer “how often”, severity assessments seek to answer “how much.” A Highly Unlikely disaster may cause significant damage, and therefore warrant as much consideration for a mitigation activity as a more frequently occurring, but generally less destructive event.

The assessment of severity divides the hazards identified above into four categories; Very Severe, Severe, Mild, and Unknown Severity or Lacking Quantitative Data. The quantitative breaks in severity are defined below.

- **Very Severe.** Very Severe hazards are those that present serious risk to life and property. Very Severe hazards are those that cause greater than \$500,000 of damage an occurrence on average and/or have great potential to kill or injure.
- **Severe.** Severe hazards are those that present a risk to life and property. Severe hazards are those that cause between \$75,000 and \$499,000 an occurrence and/or have potential to injure and possibly kill.
- **Mild Severity.** Mild hazards are those that generally present a lower risk to life and property. These hazards may cause less than \$75,000 of damage an occurrence and/or present limited risks to life and property.
- **Unknown Severity or Lacking Quantitative Data.** Hazards of unknown severity may not have occurred in the past (although the probability of occurrence is generally known) or are too varying in intensity to accurately predict damage. These hazards are not dismissed outright, but the historical data and other data available in the HMP is not sufficient to quantify the risk to life and property.

Primarily using the HMP as a reference, the severity rating of each hazard reviewed in Parts 2.3.2 through 2.3.4 above is below:

Table 6 - Estimated Hazard Severity

| Severity | Hazard |
|---------------|--------------------------------|
| Very Severe | Hurricanes and Coastal Hazards |
| | Flooding |
| Severe | Tornadoes/Thunderstorms |
| | Wildfires |
| Mild Severity | Severe Winter Weather |
| | Excessive Heat |
| | Drought |

| Severity | Hazard |
|---|--------------------------|
| Unknown Severity or Lacking Quantitative Data | Earthquakes |
| | Geological Hazards |
| | Dam Failures |
| | Hazardous Substances |
| | Radiological Emergencies |
| | Terrorism |

2.3.6 Previous Events

The most reliable measure of severity is the amount of damage (including fatalities and injuries, if applicable) inflicted by previous disaster events. Often severity is conflated with the *intensity* of the event. Intensity is a measure of the strength of a storm, such as the category rating used for hurricanes, 1 through 5 in the Saffir-Simpson Hurricane Wind Scale. The Mitigation Needs Assessment seeks to reframe severity as impact rather than the natural severity of the disaster. For instance, a Category 1 hurricane may have a greater impact than a Category 5 hurricane, in the appropriate conditions.

The HMP identifies past disasters from 1996 through 2017. Since 2017, the State has faced major disasters including Hurricane Florence, Hurricane Michael, and Hurricane Dorian which are not included in the calculations for flooding or coastal hazards. It is therefore appropriate to assume that flood and coastal disaster events are underestimated in the HMP quantitative assessment of risk based on past events.

2.3.7 Very Severe Impacts

The most severe disaster expected in the MID areas are hurricanes and coastal hazards and flooding.

Hurricanes and coastal hazards present the most severe impacts expressed in past events for the MID areas. The HMP includes coastal hazards from 1993 for a total of 18 hurricanes or tropical storms with impacts to the State. The inclusion of Hurricane Florence brings this total to 19. In each instance, at least one MID area was the geographic location of the storm.

The total cost of coastal events to North Carolina is catastrophic. The past two major disaster declarations (Hurricane Matthew and Hurricane Florence) combined for nearly \$29 billion in damage statewide.³⁴ The majority of that damage is concentrated in the MID areas identified in this Action Plan. Through 19 storms, the damage has exceeded \$32 billion and accounted for 117 fatalities.

³⁴ NOAA National Centers for Environmental Information (NCEI). *U.S. Billion-Dollar Weather and Climate Disasters (2019)*. <https://www.ncdc.noaa.gov/billions/>

Table 7 - Coastal Hazard Impacts, Since 1993

| Event | Year | Fatalities | Property and Crop Damage (2017 dollars) |
|--------------|-------------|-------------------|--|
| Emily | 1993 | 0 | \$ 85,400,000 |
| Gordon | 1994 | 0 | \$ 832,722 |
| Felix | 1995 | 1 | \$ 1,619,473 |
| Bertha | 1996 | 1 | \$ 490,700,000 |
| Fran | 1996 | 13 | \$ 1,927,000,000 |
| Bonnie | 1998 | 1 | \$ 498,000,000 |
| Dennis | 1999 | 0 | \$ 4,562,900 |
| Floyd | 1999 | 13 | \$ 6,600,000,000 |
| Irene | 1999 | 1 | \$ 45,923 |
| Isabel | 2003 | 2 | \$ 641,000,000 |
| Alex | 2004 | 0 | \$ 9,800,000 |
| Charley | 2004 | 3 | \$ 29,190,000 |
| Ivan | 2004 | 8 | \$ 17,500,000 |
| Ophelia | 2005 | 0 | \$ 78,400,000 |
| Earl | 2010 | 0 | \$ 3,350,000 |
| Irene | 2011 | 6 | \$ 201,400,000 |
| Arthur | 2014 | 0 | \$ 698,500 |
| Matthew | 2016 | 28 | \$ 4,800,000,000 |
| Florence | 2018 | 40 | \$ 17,000,000,000 |
| Total | - | 117 | \$ 32,389,499,518 |

Using the table above, the average fatality per event is greater than six and the average expected loss is \$1.7 billion, a staggering amount of damage per occurrence. An analysis of both annualized and per-occurrence average where available indicates that hurricanes and coastal hazards are the most potentially devastating hazard facing the MID area and even Statewide.

For flood hazards, The MID areas experienced a total of 663 flood events and subsequently suffered 18 fatalities, 2 injuries, and over \$448 million in property and crop damage from

flooding.³⁵ Floods in the MID areas tend to be more costly and more fatal than the rest of the State, as the MID areas account for 27 percent of the total cost of flooding statewide and 25 percent of the fatalities, despite accounting for less than 20 percent of all flood events statewide.

Table 8 - Flood Severity, Fatalities and Damage, MID Areas

| County | # of events (1996- | Fatalities | Injuries | Property and Crop Damage (2017 dollars) |
|-------------------------------|--------------------|------------|-----------|---|
| New Hanover | 136 | - | 2 | \$ 5,475,278 |
| Brunswick | 75 | - | - | \$ 4,950,971 |
| Pender | 74 | - | - | \$ 1,311,278 |
| Cumberland | 50 | 2 | - | \$ 88,434,863 |
| Bladen | 41 | 2 | - | \$ 19,927,883 |
| Carteret | 39 | - | - | \$ 18,416 |
| Edgecombe | 35 | 8 | - | \$ 91,659,926 |
| Onslow | 35 | - | - | \$ 9,687,065 |
| Wayne | 32 | 4 | - | \$ 149,949,487 |
| Columbus | 30 | 1 | - | \$ 62,234,960 |
| Craven | 27 | 1 | - | \$ 1,254,914 |
| Duplin | 26 | - | - | \$ 1,340,859 |
| Robeson | 19 | - | - | \$ 4,892,669 |
| Scotland | 17 | - | - | \$ 3,085,147 |
| Jones | 15 | - | - | \$ 4,357,391 |
| Pamlico | 12 | - | - | \$ 11,319 |
| Total in MID | 663 | 18 | 2 | \$ 448,592,426 |
| Remainder of the State | 2,700 | 54 | 26 | \$ 1,214,872,328 |

The average damage per occurrence for a flood event in the MID areas is \$676,610. The greatest historical damage has been experienced in Wayne, Edgecombe, and Cumberland County.

³⁵ North Carolina Department of Public Safety. 2018 State Hazard Mitigation Plan, 3-12.

<https://files.nc.gov/ncdps/documents/files/State%20of%20North%20Carolina%20Hazard%20Mitigation%20Plan%20Final%20As%20Adopted.pdf>.

The MID areas also have a high concentration of Repetitive Loss (RL) and Severe Repetitive Loss (SRL) property. A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. There are over 122,000 RL properties nationwide. A Severe Repetitive Loss (SRL) Property is a building which has had flood-related damage resulting in a flood insurance claim four or more times, with the amount of each claim exceeding \$5,000 and the cumulative amount is greater than \$20,000, or when two separate flood insurance claims have exceeded the reported value of the property.

Approximately 47 percent of all RL property and 41 percent of all SRL property is located within the MID counties. The counties with the highest concentration of RL and SRL properties are coastal counties such as New Hanover, Carteret, Pamlico, Craven, Brunswick, and Onslow. New Hanover has nearly double the second greatest county's total of RL properties with 1,305 compared to Pamlico County's 733.

Figure 6 - RL/SRL Property in MID Counties

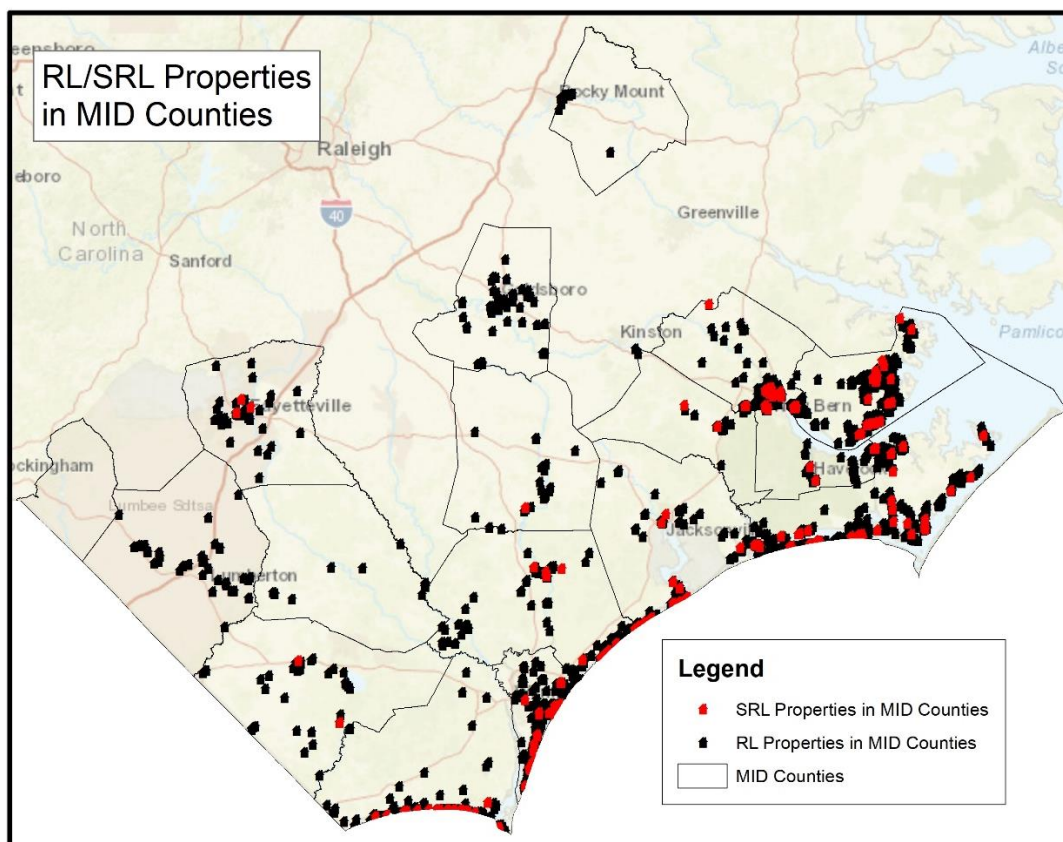


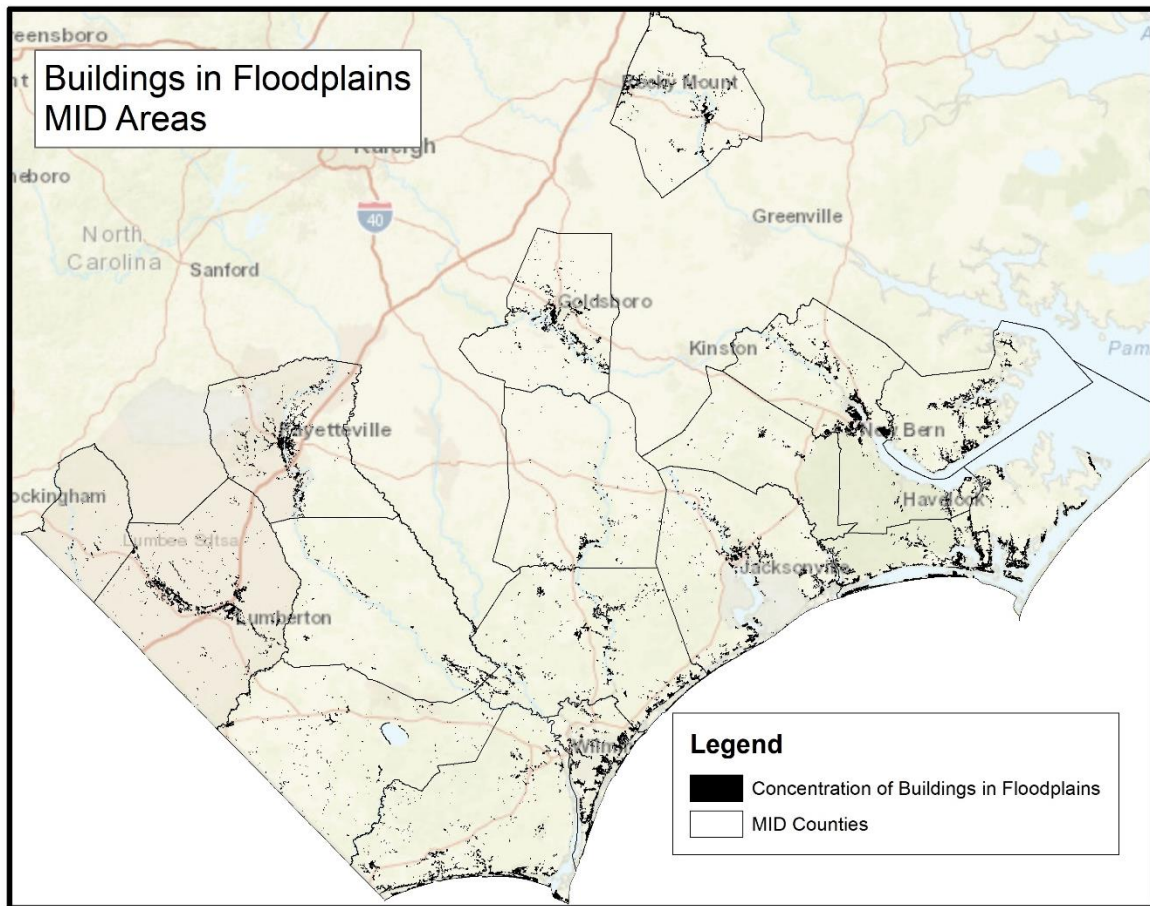
Table 9 - RL/SRL Property in MID Counties, by County

| County | RL Property | SRL Property |
|-----------------------------|---------------|--------------|
| NEW HANOVER COUNTY | 1,305 | 54 |
| PAMLICO COUNTY | 733 | 25 |
| CARTERET COUNTY | 725 | 45 |
| CRAVEN COUNTY | 653 | 44 |
| ONslow COUNTY | 574 | 27 |
| BRUNSWICK COUNTY | 557 | 21 |
| PENDER COUNTY | 420 | 29 |
| WAYNE COUNTY | 61 | - |
| ROBESON COUNTY | 53 | - |
| COLUMBUS COUNTY | 47 | 2 |
| CUMBERLAND COUNTY | 43 | 3 |
| DUPLIN COUNTY | 29 | 1 |
| JONES COUNTY | 17 | 2 |
| BLADEN COUNTY | 15 | - |
| EDGEcombe COUNTY | 15 | - |
| BEAUFORT COUNTY | 1 | - |
| Total in MID | 5,248 | 253 |
| Grand Total | 11,159 | 611 |
| Total outside of MID | 5,911 | 358 |
| Percent in MID | 47% | 41% |

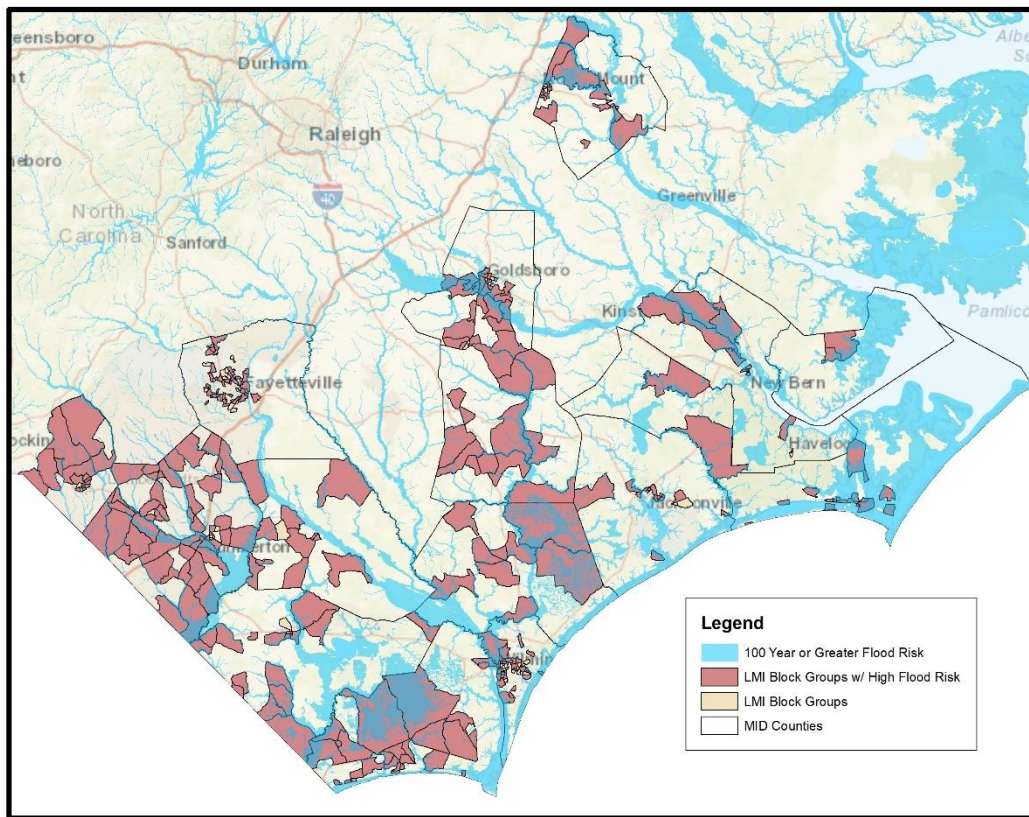
The total risk to buildings in floodplains is extreme in the MID areas. According to NCEM data, there are more than 130,000 buildings located within the 100-year or 500-year floodplain within the MID areas. The total value of these structures is over \$40 billion and is considered at risk of flood losses.

Table 10 - Value of buildings in the floodplain, MID areas

| Buildings in Floodplain | Total Value |
|-------------------------|-------------------|
| 133,803 | \$ 40,972,883,854 |

Figure 7 - Buildings in Floodplains, MID Areas

In addition to at-risk buildings, a significant amount of the population in the MID areas is located in a block group that is intersected by the 100-year floodplain. Of the 1,055 block groups which comprise or border the MID areas, 362 of those block groups have a low- and moderate-income (LMI) population greater than 51 percent of the total population of the block group. This is known as an LMI block group. Of those 362 LMI block groups, 304 of them contain a portion of the 100-year floodplain.

Figure 8 - LMI Block Groups and the 100-year Floodplain

Although it is not clear how the population of the block groups is organized within the block group in relation to the floodplain, 261,035 individuals live within block groups that are intersected by the 100-year floodplain. Based on the spatial distribution of the floodplains and the LMI population of the MID areas, it is evident that a significant portion of the LMI population is located within the 100-year floodplain. This is corroborated by a December 2017 study performed by the NYU Furman Center, which found that approximately four percent of North Carolina's total population is found in the 100-year floodplain (431,190 individuals) and that the statewide poverty rate was similar within and without the floodplain (approximately 17 percent).³⁶

2.3.8 Severe Impacts

Two hazard types comprise the Severe category, Tornadoes and Thunderstorms and Wildfires.

For tornadoes, a total of 441 events have been recorded since 1950 in the MID areas, while from 1996 through 2017 a total of 2,580 severe thunderstorms have been recorded. The average expected loss per event, expressed in 2017 dollars for tornadoes and thunderstorms combined, is \$185,448.

³⁶ New York University Furman Center. *Population in the U.S. Floodplains.* https://furmancenter.org/files/Floodplain_PopulationBrief_12DEC2017.pdf

Table 11 - Tornadoes by MID County

| County | Events by Fujita Scale (F-Rating), 1950-2017 | | | | | Total Events | Fatalities | Injuries | Damage |
|-------------------------------|--|------------|------------|-----------|-----------|--------------|------------|--------------|-------------------------|
| | 0 | 1 | 2 | 3 | 4 | | | | |
| Bladen | 8 | 6 | 6 | 1 | | 21 | 5 | 8 | \$ 485,523 |
| Brunswick | 16 | 8 | 1 | | | 25 | - | - | \$ 2,114,000 |
| Carteret | 37 | 23 | 6 | | | 66 | - | 11 | \$ 24,968,233 |
| Columbus | 10 | 9 | 4 | 2 | | 25 | 8 | 40 | \$ 15,999,620 |
| Craven | 21 | 7 | 3 | 1 | | 32 | - | 48 | \$ 28,933,635 |
| Cumberland | 7 | 7 | 4 | 3 | 2 | 23 | 5 | 168 | \$ 99,079,510 |
| Duplin | 9 | 12 | 13 | 2 | 1 | 37 | - | 86 | \$ 90,248,666 |
| Edgecombe | 1 | 3 | - | 3 | | 7 | - | 8 | \$ 2,844,846 |
| Jones | 10 | 2 | 4 | 1 | | 17 | 1 | 13 | \$ 29,474,562 |
| New Hanover | 8 | 10 | | | | 18 | - | 7 | \$ 3,938,265 |
| Onslow | 28 | 11 | 4 | 1 | | 44 | 3 | 53 | \$ 23,649,127 |
| Pamlico | 9 | 2 | 2 | 1 | | 14 | 1 | 45 | \$ 26,160,194 |
| Pender | 17 | 10 | 4 | | | 31 | 3 | 31 | \$ 6,321,900 |
| Robeson | 16 | 18 | 7 | | 3 | 44 | 6 | 334 | \$ 22,278,431 |
| Scotland | 2 | 3 | 1 | 2 | 3 | 11 | - | 24 | \$ 19,342,737 |
| Wayne | 13 | 8 | 3 | 1 | 1 | 26 | 4 | 159 | \$ 125,913,490 |
| Total in MID | 212 | 139 | 62 | 18 | 10 | 441 | 36 | 1,035 | \$ 521,752,739 |
| Statewide | 555 | 515 | 232 | 58 | 29 | 1,389 | 127 | 2,577 | \$ 3,000,368,872 |
| Remainder of the State | 343 | 376 | 170 | 40 | 19 | 948 | 91 | 1,542 | \$ 2,478,616,133 |

Tornadoes are extremely damaging statewide. The damage losses from Tornadoes in MID areas are 17.4 percent of the total statewide losses, despite the MIDs accounting for 31.75 percent of all tornadoes statewide. While the cause is unclear based on the data, it does indicate that MID areas are not as vulnerable to tornado damage as other areas of the State. In contrast, 40 percent of tornado-related injuries occur in MID counties, indicating that the risk to life is greater than the risk to property in a tornado event in the MID areas.

Table 12 - Severe Thunderstorms by MID County

| County | Thunderstorm Events (1996-2017) | Fatalities | Injuries | Damage |
|-------------------------------|--|-------------------|-----------------|-----------------------|
| Bladen | 234 | - | 6 | \$ 2,684,680 |
| Brunswick | 130 | - | 1 | \$ 809,879 |
| Carteret | 139 | - | 1 | \$ 2,141,410 |
| Columbus | 214 | - | 7 | \$ 9,609,388 |
| Craven | 179 | - | 2 | \$ 367,027 |
| Cumberland | 229 | - | 8 | \$ 1,749,515 |
| Duplin | 198 | - | 6 | \$ 1,449,497 |
| Edgecombe | 118 | - | 1 | \$ 1,494,863 |
| Jones | 65 | - | 3 | \$ 145,531 |
| New Hanover | 133 | - | 5 | \$ 2,430,684 |
| Onslow | 169 | - | - | \$ 398,613 |
| Pamlico | 35 | - | - | \$ 95,863 |
| Pender | 125 | - | 7 | \$ 3,584,115 |
| Robeson | 309 | - | 8 | \$ 5,483,568 |
| Scotland | 96 | - | 4 | \$ 851,930 |
| Wayne | 207 | 1 | 9 | \$ 5,187,599 |
| Total in MID | 2,580 | 1 | 68 | \$ 38,484,162 |
| Statewide | 14,845 | 31 | 226 | \$ 103,170,357 |
| Remainder of the State | 12,265 | 30 | 158 | \$ 64,686,195 |

Severe thunderstorms are not as pronounced in the MID areas, accounting for only 17.38 percent of storms statewide. However again injuries appear more common in the MID areas from severe storms, as MID areas account for 30 percent of thunderstorm-related injuries. Thunderstorm damage is also disproportionate in the MID counties, with 37.3 percent of statewide damages within the MID areas.

Fifty percent of wildfire incidents in the state occur within the MID counties. Damage as a percent of incidents is approximately in line with the proportion of incidents in the MID areas,

at 56.75 percent of damages caused by wildfire in the MID counties. The average cost of a wildfire incident is \$200,147 upon review of the 16 wildfire events in the MID areas. The outlier for wildfire incidents is Brunswick County, with a total of 4 major events since 1998 with a property and crop damage total of \$2.6 million.

2.3.9 Mild Impacts

Mild hazards are those with minimal past damage or typically pose a lesser threat to life. The mild hazards in the MID areas include Severe Winter Weather and Excessive Heat.

Severe Winter Weather poses little threat to the MID areas, with New Hanover, Craven, Duplin, Scotland, and Jones counties not registering property or crop damage of any kind from winter weather. Only 5.3 percent of all winter weather events in North Carolina occur in the MID areas, accounting for 5.4 percent of total damage from winter weather for the State. Worth noting, and similar to thunderstorms and tornadoes, is that the fatality and injury rate is higher in the MID areas than elsewhere in the state. Despite low damage per occurrence (\$53,732 per occurrence, on average), 34 fatalities and 177 injuries are attributed to winter weather in the MID areas since 1996, approximately 26 percent of the State total.

Table 13 - Severe Winter Weather in the MID Counties

| County | Severe Winter Weather events, 1996-2017 | Fatalities | Injuries | Property and Crop Damage |
|-------------|---|------------|----------|--------------------------|
| New Hanover | 6 | - | - | \$ - |
| Brunswick | 9 | - | - | \$ 201,211 |
| Pender | 23 | 2 | - | \$ 2,001,571 |
| Cumberland | 33 | 1 | - | \$ 10,283 |
| Bladen | 26 | - | - | \$ 4,604,380 |
| Carteret | 21 | 4 | 4 | \$ 334,011 |
| Edgecombe | 41 | - | - | \$ 23,807 |
| Onslow | 26 | 1 | 35 | \$ 222,211 |
| Wayne | 31 | - | - | \$ 10,283 |
| Columbus | 18 | - | - | \$ 7,845,330 |
| Craven | 27 | - | - | \$ - |
| Duplin | 30 | 1 | 5 | \$ - |
| Robeson | 27 | - | - | \$ 5,947,616 |

| County | Severe Winter Weather events, 1996-2017 | Fatalities | Injuries | Property and Crop Damage |
|-------------------------------|---|------------|------------|--------------------------|
| Scotland | 31 | - | - | \$ - |
| Jones | 25 | - | - | \$ - |
| Pamlico | 21 | - | 2 | \$ 23,596 |
| Total in MID | 395 | 9 | 46 | \$ 21,224,299 |
| Statewide | 7,500 | 34 | 177 | \$ 395,455,789 |
| Remainder of the State | 7,105 | 25 | 131 | \$ 374,231,490 |

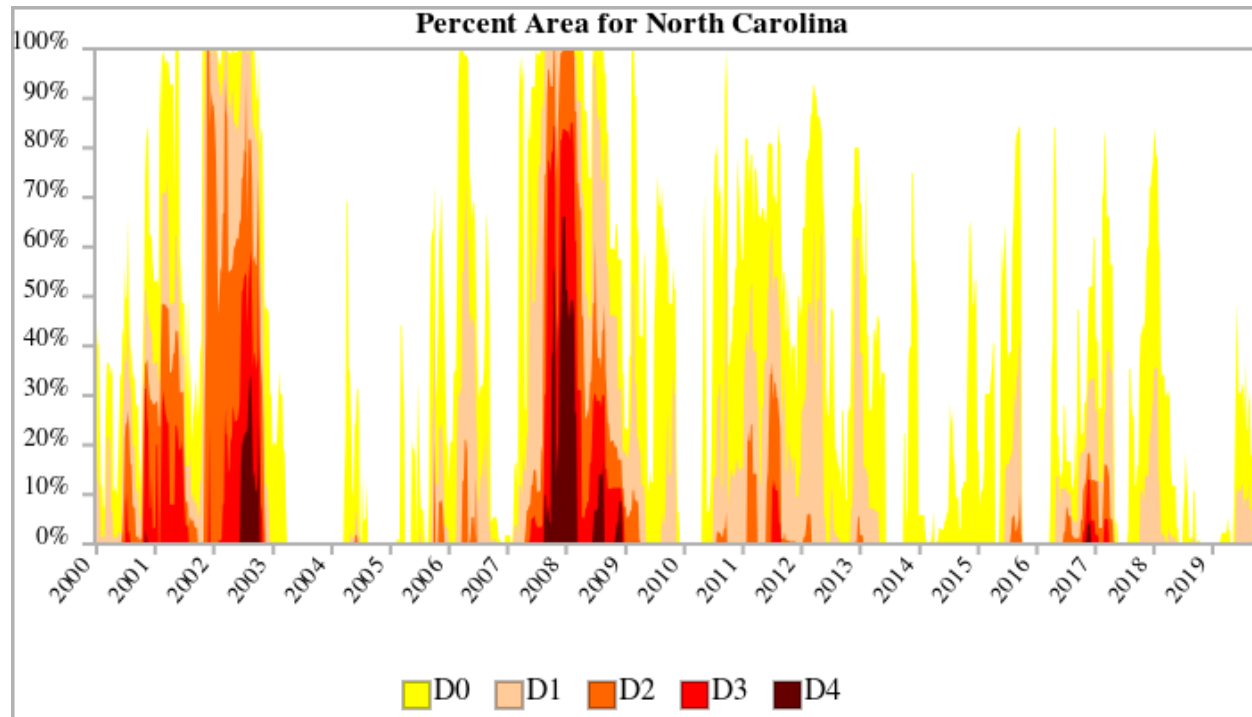
Excessive heat is not associated with direct damage costs, but can be deadly. Thirty four excessive heat events since 1996 have killed 16 people and injured another 15. While 27 percent of excessive heat events have impacted the MID counties, 88 percent of injuries and 31 percent of fatalities statewide have come from the MID areas.

2.3.10 Unknown Severity

Hazards with unknown severity may occur so infrequently to not have a meaningful estimate of average damage caused by an event, may occur over long time horizons and therefore are difficult to directly tie damage to, or are variable in scope and impact by their nature and therefore cannot be accurately estimated. The hazards with unknown severity include drought, hazardous substances, earthquakes, dam failures, geological hazards, radiological emergencies, and terrorism.

Drought does not directly contribute to property damage, but can significantly impact crop production over a long time horizon. Therefore it is difficult to measure specific losses attributed to drought. The United States Drought Monitor began measuring drought by duration in 2000 nationwide. Since then, North Carolina has had multiple droughts, with the longest lasting from January 4, 2000 and ending on December 17, 2002. The most intense drought occurred the week of December 25, 2007 where 66.2 percent of the landmass of North Carolina was affected.³⁷

³⁷ United States Drought Monitor. *National Integrated Drought Information System*.
<https://www.drought.gov/drought/states/north-carolina>

Figure 9: Drought in North Carolina

Longer droughts affect crop production, may worsen the risk of wildfire, and generally reduce quality of life.

Earthquakes occur infrequently within the MID areas and seldom with enough damage potential to create an average damage per occurrence. However, earthquake losses have been annualized in the HMP.

Table 14 - Annualized earthquake losses, MID areas

| County | Annualized Losses |
|------------|-------------------|
| Bladen | \$ 178,792 |
| Brunswick | \$ 409,578 |
| Carteret | \$ 70,584 |
| Columbus | \$ 411,353 |
| Craven | \$ 93,615 |
| Cumberland | \$ 1,409,515 |
| Duplin | \$ 257,214 |
| Edgecombe | \$ 61,166 |

| County | Annualized Losses |
|-------------------------------|----------------------|
| Jones | \$ 12,803 |
| New Hanover | \$ 831,871 |
| Onslow | \$ 231,484 |
| Pamlico | \$ 8,172 |
| Pender | \$ 98,802 |
| Robeson | \$ 1,153,622 |
| Scotland | \$ 295,103 |
| Wayne | \$ 374,682 |
| Total in MID | \$ 5,898,354 |
| Statewide | \$ 36,593,359 |
| Remainder of the State | \$ 30,695,005 |

Annualized losses are difficult to use to assess the severity of a single disaster, therefore the severity of earthquakes is not as well defined in this Mitigation Needs Assessment.

Geological hazards vary in severity, and similar to droughts, present hazards over long time horizons with often imperceptible changes, particularly when assessing geological hazards associated with coastal erosion. The threat of sinkholes and coastal erosion, the most pressing geological hazards in the MID areas, is best described by the buildings at risk of loss within coastal erosion zones. The HMP prepared an analysis of buildings within 50 yards of an active sinkhole or within 50 yards of a coastal erosion area. The total value of the buildings at risk within 50 yards of an active sinkhole in the MID areas is \$946 million. The majority of those buildings and the majority of the value of all buildings at risk of sinkholes is in New Hanover County, with 1,311 buildings worth \$617 million alone. The total value of buildings at risk of eroding shoreline is \$80 million, generally concentrated in New Hanover, Onslow, and Brunswick counties.

Table 15 - Buildings at risk of sinkholes or coastal erosion in MID areas

| County | # of Buildings within 50 yards of a sinkhole | Value of buildings at risk | # of buildings within 50 yards of eroding shoreline | Value of buildings at risk |
|--------------|--|----------------------------|---|----------------------------|
| Brunswick | 1,693 | \$ 274,060,857 | 101 | \$ 16,954,506 |
| Carteret | - | \$ - | 23 | \$ 5,855,243 |
| Jones | 4 | \$ 466,228 | - | \$ - |
| New Hanover | 1,223 | \$ 617,106,193 | 39 | \$ 30,862,658 |
| Onslow | 1,311 | \$ 50,397,642 | 130 | \$ 21,965,739 |
| Pender | 97 | \$ 4,325,222 | 52 | \$ 4,569,816 |
| Total | 4,328 | \$ 946,356,142 | 345 | \$ 80,207,962 |

Dam failure is considered in the HMP but annualized losses statewide total only \$197. Therefore, the risk of dam failure is minimal in the MID areas, which also contain relatively few high risk dams. Similarly, hazardous substances, radiological emergencies, and terrorism hazards are not annualized and are not summarized at the county level in the HMP to draw a conclusion about the relative severity of these events. In some instances, such as radiological emergencies, no such hazard has manifested as a disaster event in State history and therefore the severity is considered minimal.

2.3.11 Multi-Hazard Interface

In some instances a disaster occurrence will increase the risk of disaster and worsen an existing hazard. This interaction between hazards is known as the Multi-hazard Interface. The Multi-hazard approach is well known in wildfire-prone wildland-urban interface (WUI) areas which face natural hazards from wildfires, drought, and mudslides caused by flooding which must all be accounted for in a hazard mitigation plan.³⁸

While wildfire hazard is generally not as serious as coastal hazards and flooding, it must be acknowledged that addressing some hazards while ignoring others may cause externalities in community vulnerability that could degrade the overall safety of the community. The following hazards may have “ripple effects” on other hazards, and worsen the risk posed by these hazards under disaster conditions.

³⁸ American Planning Association. *Multihazard Planning Framework for Communities in the Wildland-Urban Interface*. https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/WUI-Hazards-Framework.pdf

Table 16 - Multi-Hazard Interface

| Disaster Condition | Increased Risk |
|--------------------------------|--------------------------------------|
| Hurricanes and Coastal Hazards | Flooding |
| | Tornadoes/Thunderstorms |
| | Dam Failures |
| | Geological Hazards (Coastal Erosion) |
| | Hazardous Substances |
| Flooding | Dam Failures |
| | Geological Hazards (Coastal Erosion) |
| | Hazardous Substances |
| Excessive Heat | Drought |
| | Wildfires |
| Drought | Wildfires |
| Wildfires | Hazardous Substances |

Hurricanes and Coastal Hazards present the greatest potential for increasing hazard conditions by worsening flood, severe weather, the potential for dam failures, coastal erosion, and potentially causing the release and spread of hazardous substances such as oil. Flooding has similar effects, but is generally more localized and does not carry the same extreme weather externality. Excessive heat, drought, and wildfires are all interconnected systems with potentially cascading effects.

When planning to mitigate risks to hazards, an effective plan will account for potential changes to the environment that could worsen other hazards. To combat these changes the State will strongly favor mitigation measures which address multiple hazards and acknowledge multi-hazard interfaces.

2.3.12 Current and Changing Conditions

A flaw in the HMP approach is that an assessment of hazard and risk rely on historical data and do not directly consider the longer-term implications of a changing climate and sea level rise. These environmental conditions must also be taken in context with changing social conditions. The population of North Carolina has increased by .5 percent since 2010, but the population changes within the MID counties has varied from county to county. Worth serious consideration, however, is the trend of increasing population in coastal counties like Brunswick,

Pender, New Hanover, and Onslow, which have increased in population while inland counties like Edgecombe, Bladen, and Jones have seen a decrease in population.

Table 17 - Population change in MID counties

| County | Population (2017) | % Change in Population (2010-2017) |
|-------------|-------------------|------------------------------------|
| Brunswick | 126,953 | 18.17% |
| Pender | 59,090 | 13.16% |
| New Hanover | 223,483 | 10.27% |
| Onslow | 187,136 | 5.27% |
| Carteret | 68,890 | 3.64% |
| Cumberland | 327,127 | 2.41% |
| Wayne | 124,150 | 1.25% |
| Duplin | 58,969 | 0.79% |
| Craven | 103,445 | -0.06% |
| Robeson* | 133,235 | -0.70% |
| Pamlico | 12,821 | -2.46% |
| Scotland | 35,244 | -2.53% |
| Columbus* | 56,505 | -2.74% |
| Jones | 9,845 | -3.03% |
| Bladen* | 33,741 | -4.12% |
| Edgecombe | 53,318 | -5.72% |

Population changes are important to consider because with increasing population, an increase in disaster losses may also be expected due to more individuals living in hazardous areas – in this context, coastal areas - and more property, such as housing stock and commercial property at risk of destruction. Conversely counties with a decreasing population may face challenges in sufficient planning and reduced access to resources to meet their needs, including a dwindling tax base and a reduction in critical services such as police, fire, and rescue. Effective mitigation planning takes these factors into account as well as the nature of the hazard while selecting the best course of action to mitigate risks specific to the community.

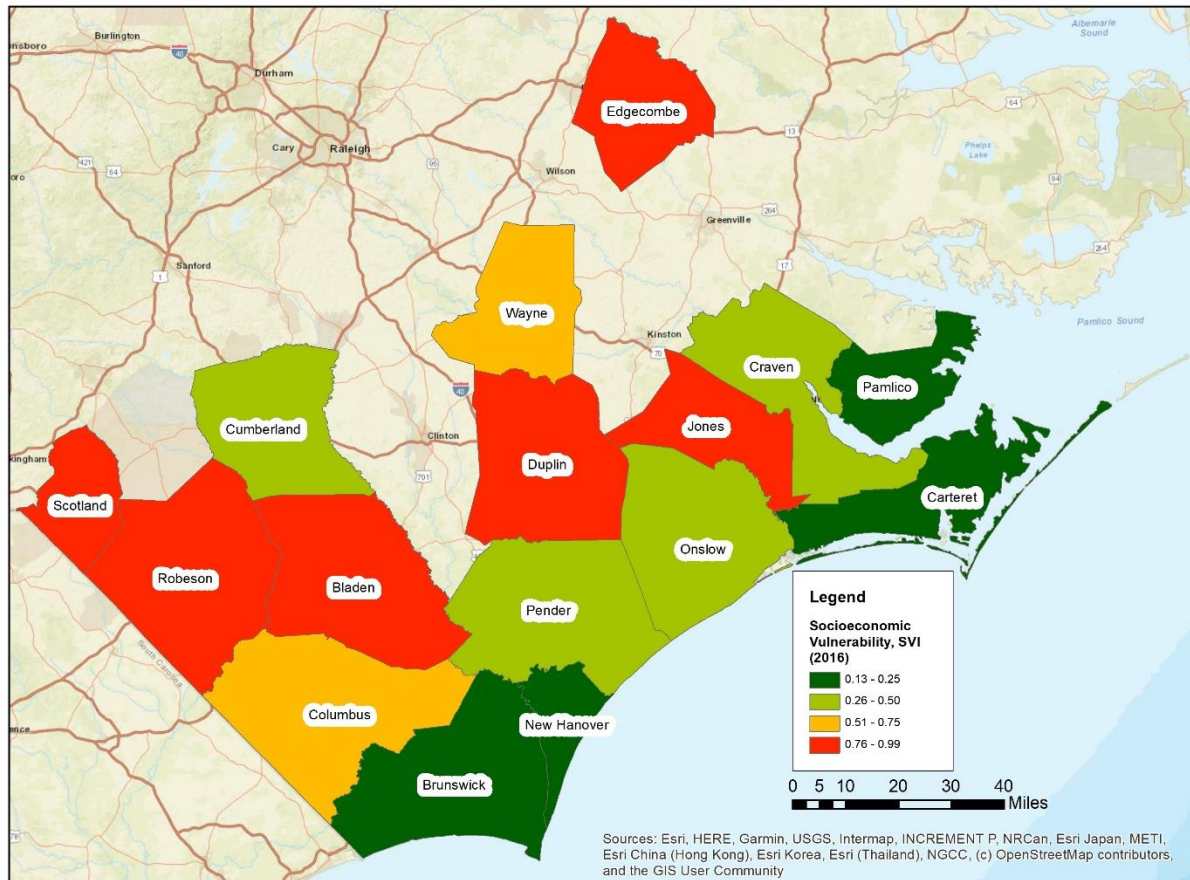
In addition to population changes, social vulnerability is an important factor in assessing hazard vulnerability. The Center for Disease Control (CDC) defines social vulnerability as the resilience

of communities when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks. CDC's Social Vulnerability Index uses 15 U.S. census variables at tract level to help local officials identify communities that may need support in preparing for hazards; or recovering from disaster. The Geospatial Research, Analysis, and Services Program (GRASP) created and maintains CDC's Social Vulnerability Index (SVI).³⁹

One of these SVI indices is a measure of socioeconomic status. The socioeconomic SVI is driven by census data on poverty level, employment, total income, and education level. The SVI is set on a scale from 0 to 1, with numbers closer to 1 indicating reduced resiliency and therefore greater susceptibility to hazard.

A significant portion of the MID areas have a high SVI. Spatially, a "belt" of high SVI counties are north and west of the coastal areas, with coastal counties such as Brunswick, New Hanover, Carteret, and Pamlico having the strongest SVI in the MID areas. In selecting appropriate mitigation measures, the SVI – and other vulnerability information – must be considered.

³⁹ Agency for Toxic Substances and Disease Registry, Center for Disease Control. *CDC's Social Vulnerability Index (SVI)*. <https://svi.cdc.gov/>.

Figure 10 - Socioeconomic Social Vulnerability Index, MID areas

2.4 Threat to Community Lifelines

In November 2014, the National Association of Counties (NACo) published “Improving Lifelines: Protecting Critical Infrastructure for Resilient Counties.” NACo defines lifelines as programs and services provided to the public, including the infrastructure systems vital to counties to operate, which are vital to the county and sometimes extend to an entire region. These lifelines ensure the public health, safety, and economic security. Lifelines differ from “life support” systems, which include emergency services and public health.⁴⁰

There are four main factors that define lifelines:

- They provide necessary services and goods that support nearly every home, business and county agency,
- Lifelines deliver services that are commonplace in everyday life, but disruption of the service has the potential to develop life-threatening situations,

⁴⁰ National Association of Counties. *Improving Lifelines: Protecting Critical Infrastructure for Resilient Counties*. https://www.naco.org/sites/default/files/documents/NACo_ResilientCounties_Lifelines_Nov2014.pdf

- They involve complex physical and electronic networks that are interconnected within and across multiple sectors, and
- A disruption of one lifeline has the potential to effect or disrupt other lifelines in a cascading effect.

The four major lifelines as defined by NACo are energy, water, transportation, and communications.

In February 2019, FEMA released the Community Lifelines Implementation Toolkit which further hones in on seven Community Lifelines; 1) safety and security, 2) communications, 3) food, water, sheltering, 4) transportation, 5) health and medical, 6) hazardous materials management, and 7) energy.⁴¹

In the Implementation Toolkit, the focus is on activating lifelines for support during incident response. The Notice instead challenges the State to consider the Community Lifelines as an element of mitigation and resilience planning. The components of the Community Lifelines are indicated below:

Table 18 - Community Lifeline Components

| Community Lifelines | Component | Community Lifelines | Component |
|-------------------------|----------------------------|---------------------|----------------------------|
| Safety and Security | Law Enforcement/Security | Energy | Power (Grid) |
| | Search and Rescue | | Temporary Power |
| | Fire Services | | Fuel |
| | Government Service | Communications | Infrastructure |
| | Responder Safety | | Alerts, Warnings, Messages |
| | Imminent Hazard Mitigation | | 911 and Dispatch |
| Food, Water, Sheltering | Evacuations | | Responder Communications |
| | Food/Potable Water | | Financial Services |
| | Shelter | Transportation | Highway/Roadway |
| | Durable Goods | | Mass Transit |
| | Water Infrastructure | | Railway |
| | Agriculture | | Aviation |

⁴¹ FEMA. *Community Lifelines Implementation Toolkit*. https://www.fema.gov/media-library-data/1550596598262-99b1671f270c18c934294a449bcca3ce/Tab1b.CommunityLifelinesResponseToolkit_508.pdf.

| Community Lifelines | Component | Community Lifelines | Component |
|---------------------|--------------------------|---------------------|--|
| Health and Medical | Medical Care | | Maritime |
| | Patient Movement | | Pipeline |
| | Public Health | Hazardous Material | Facilities |
| | Fatality Management | | Hazardous Debris, Pollutants, Contaminants |
| | Health Care Supply Chain | | |

The Mitigation Needs Assessment seeks to quantitatively assess the significant potential impacts and risks of hazards affecting the Community Lifelines. It is the expressed intent of HUD that CDBG-MIT funded activities that ensure that these critical areas are made more resilient and are able to reliably function during future disasters, can reduce the risk of loss of life, injury, and property damage and accelerate recovery following a disaster.

To quantitatively assess the damage previously dealt to each lifeline, FEMA Public Assistance (PA) project costs and FEMA Individual Assistance (IA) FEMA Verified Loss (FVL) for both Hurricanes Matthew and Florence were reviewed in the MID areas. The damage was categorized according to the impacted Community Lifeline. The result is a total damage breakdown using these funding sources as a proxy for damage across each lifeline. FEMA Hazard Mitigation Grant Program (HMGP) projects for residential mitigation (elevation, reconstruction, and acquisition) and infrastructure were not included, as HMGP projects largely intersect the purpose and nature of CDBG-MIT funds in the sense that they seek to reduce future losses.

The approach is to identify the most heavily impacted Community Lifelines and focus CDBG-MIT funds in those areas to provide long-lasting or permanent interventions to break the cycle of repeated Federal investment to serve the same vulnerable lifelines.

Table 19 - Damage to Lifelines, FEMA PA and IA in MID Areas

| Event | Damage Verification Source | Safety and Security | Food, Water, Sheltering | Health and Medical | Energy |
|--------------------|----------------------------|----------------------|-------------------------|--------------------|---------------------|
| Hurricane Matthew | Public Assistance | \$56,068,699 | \$40,151,959 | \$1,000,402 | \$6,164,177 |
| | Individual Assistance | | \$47,978,514 | | |
| Hurricane Florence | Public Assistance | \$118,211,811 | \$698,147 | \$1,106,425 | \$4,247,591 |
| | Individual Assistance | | \$188,408,439 | | |
| Total | | \$174,280,510 | \$277,237,059 | \$2,106,827 | \$10,411,768 |

| Event | Damage Verification Source | Communications | Transportation | Hazardous Materials Management | Total |
|--------------------|----------------------------|------------------|----------------------|--------------------------------|----------------------|
| Hurricane Matthew | Public Assistance | \$313,580 | \$111,721,533 | \$39,594 | \$215,459,943 |
| | Individual Assistance | | | | \$47,978,514 |
| Hurricane Florence | Public Assistance | \$4,472 | \$479,128 | \$125,691 | \$124,873,264 |
| | Individual Assistance | | | | \$188,408,439 |
| Total | | \$318,052 | \$112,200,661 | \$165,284 | \$576,720,160 |

To better inform the analysis, and to pinpoint needs across each lifeline, a deeper analysis is warranted.

2.4.1 Safety and Security

The Safety and Security lifeline is focused on immediate damage prevention, law enforcement, fire services, rescue operations, and government services. The FEMA PA Category B projects, “Emergency Protective Measures,” is a suitable measure of the immediate pre-disaster needs of impacted communities. These emergency measures and public services account for approximately 30 percent of the FEMA documented damage to lifelines.

Continued public services and the reduction of downtime in critical needs is a significant focus of mitigation funds.

2.4.2 Food, Water, Sheltering

Food, Water, and Sheltering are critical needs post-disaster and the primary focus of some FEMA PA projects related to water infrastructure such as water and sewer as well as FEMA IA documented damage. The FEMA IA estimate is based on applicants with FEMA Verified Loss (FVL) greater than \$0 to real property in the MID areas. Based on the assessment of damage to each lifeline, the Food, Water, Sheltering lifeline accounted for the greatest extent of damages with 48 percent of FEMA documented damages to lifelines.

The State endeavors to primarily focus the use of CDBG-MIT funds to address the threat to the Food, Water, and Sheltering Community Lifeline through buyout and affordable housing initiatives. Other resources are available to address facets of the complimentary Community Lifelines, but the CDBG National Objectives and existing program structure established for CDBG-DR funds provides an existing framework to best address this lifeline.

2.4.3 Health and Medical

Health and Medical lifelines include medical care, fatality management, and the health care supply chain. Primarily, CDBG-MIT funds can fortify the Health and Medical lifeline by easing patient movement and providing for public health improvements through the implementation

of a variety of programs or projects. There are few FEMA PA projects directly associated with the Health and Medical lifeline, however the Health and Medical lifeline is greatly benefited by the auxiliary benefits through improvements in infrastructure.

2.4.4 Energy

The Energy lifeline is comprised of power delivery, both permanent and temporary, and the supply of fuel. Many FEMA PA projects are associated with the installation of generators for temporary power and the hardening of power grids.

In “Improving Lifelines,” power delivery is one of the major lifelines considered and there are multiple opportunities presented for counties, such as smart grids, emergency backup power, and updated building codes which may be provided by other funding sources.

2.4.5 Communications

The Communications lifeline closely aligns with a State priority to improve access to high-speed internet Statewide. On March 14, 2019 Governor Roy Cooper signed Executive Order No. 91, “Establishing the Task Force on Connecting North Carolina, Promoting Expansion of Access to High-Speed Internet and Removing Barriers to Broadband Infrastructure Installation.”

The Communications lifeline is critical in every phase of disaster. Communications in pre-disaster help educate and inform vulnerable individuals about their risk and also helps them prepare for disaster. During disaster, timely communication can directly save lives and property. Post-disaster, communications are necessary to simplify accessing recovery resources and staying in touch with vital information throughout the recovery process.

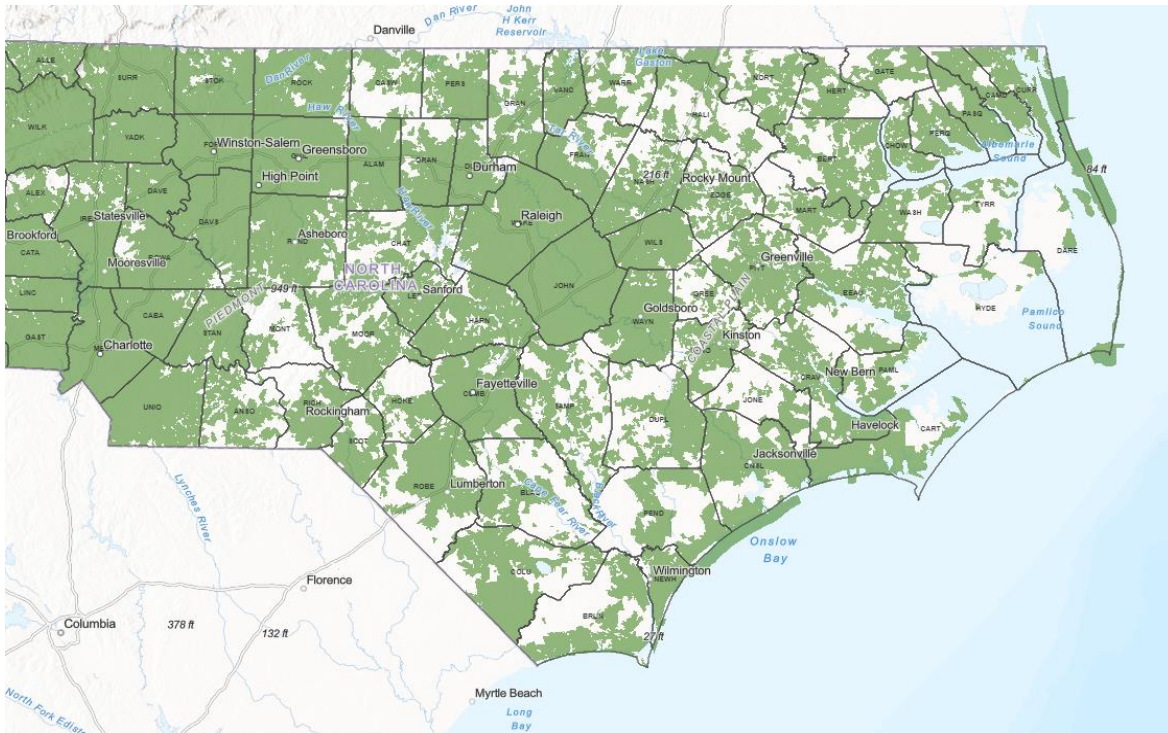
The relative damage and repair to communications infrastructure is limited in the FEMA PA projects pool. This may be an indicator that there is little communications infrastructure existing in the MID areas. The map below demonstrates the lack of broadband infrastructure in MID counties, including Robeson, Columbus, Brunswick, Pender, Duplin, Edgecombe, Onslow, Jones, Craven, and Pamlico. Generally, southeast North Carolina has insufficient broadband access.⁴²

While CDBG-MIT funds are not available to improve broadband access at this time, a future allocation may be leveraged to increase broadband access. All new construction will feature broadband connectivity, as described in Part 6.1 below.

⁴² NCDIT Broadband Infrastructure Office. *Broadband Service Areas*.

<https://nconemap.maps.arcgis.com/apps/webappviewer/index.html?id=01dbafeaa16247e59555d9f445be15f6>

Figure 11: Broadband Service Areas Greater than or Equal to 25mbps Download, 3 mbps Upload



2.4.6 Transportation

The Transportation lifeline has the some of the greatest potential for intersect between other lifelines. For instance, improved infrastructure helps the safety and security lifeline by providing access to rescue during a disaster event. A significant amount of FEMA PA funds have been dedicated to restoring damaged transportation infrastructure. Nearly 20 percent of FEMA PA funds address a transportation infrastructure need.

2.4.7 Hazardous Materials Management

Hazardous Materials management intersects with many other Community Lifelines, specifically Transportation, Safety and Security, and Food, Water, and Sheltering. Previous analysis of the risk of hazardous materials exposure in the MID areas has been conducted in this Assessment to ensure that a hazardous materials scenario is not overlooked. One way hazardous materials management is provided for is through funding hazardous materials abatement, such as lead and asbestos removal, during rehabilitation or reconstruction of damaged property through CDBG-DR funded programs. Generally, CDBG-MIT funds will indirectly augment the Hazardous Materials Management lifeline, and investment in the Transportation Community Lifeline is one of the best ways to strengthen this lifeline.

2.5 Risk Assessment

Table 20 - Hazards by Threat to Community Lifelines

| Hazard | Safety and Security | Food, Water, Sheltering | Health and Medical | Energy |
|--------------------------------|---------------------|-------------------------|-------------------------------|-----------------|
| Flooding | Extreme Threat | Extreme Threat | Extreme Threat | Extreme Threat |
| Hurricanes and Coastal Hazards | Extreme Threat | Extreme Threat | Extreme Threat | Extreme Threat |
| Tornadoes/Thunderstorms | High Threat | High Threat | High Threat | High Threat |
| Hazardous Substances | High Threat | High Threat | High Threat | Moderate Threat |
| Excessive Heat | Moderate Threat | Moderate Threat | High Threat | Low Threat |
| Wildfires | Moderate Threat | Moderate Threat | Moderate Threat | Low Threat |
| Drought | Moderate Threat | High Threat | High Threat | Low Threat |
| Severe Winter Weather | Low Threat | Low Threat | Low Threat | Low Threat |
| Earthquakes | Low Threat | Low Threat | Low Threat | Low Threat |
| Dam Failures | Low Threat | Low Threat | Low Threat | Low Threat |
| Geological Hazards | Low Threat | Moderate Threat | Low Threat | Low Threat |
| Radiological Emergencies | Very Low Threat | Very Low Threat | Very Low Threat | Very Low Threat |
| Terrorism | Very Low Threat | Very Low Threat | Very Low Threat | Very Low Threat |
| Hazard | Communications | Transportation | Hazardous Material Management | Combined Threat |
| Flooding | Extreme Threat | Extreme Threat | Extreme Threat | Extreme Threat |
| Hurricanes and Coastal Hazards | Extreme Threat | Extreme Threat | Extreme Threat | Extreme Threat |
| Tornadoes/Thunderstorms | High Threat | Moderate Threat | Moderate Threat | High Threat |
| Hazardous Substances | Moderate Threat | Moderate Threat | High Threat | High Threat |
| Excessive Heat | Low Threat | Low Threat | Low Threat | Moderate Threat |
| Wildfires | Low Threat | Low Threat | Moderate Threat | Moderate Threat |
| Drought | Low Threat | Low Threat | Low Threat | Moderate Threat |
| Severe Winter Weather | Low Threat | Low Threat | Low Threat | Low Threat |
| Earthquakes | Low Threat | Low Threat | Low Threat | Low Threat |
| Dam Failures | Low Threat | Low Threat | Low Threat | Low Threat |
| Geological Hazards | Low Threat | Moderate Threat | Low Threat | Low Threat |
| Radiological Emergencies | Very Low Threat | Very Low Threat | Very Low Threat | Very Low Threat |
| Terrorism | Very Low Threat | Very Low Threat | Very Low Threat | Very Low Threat |

The risk assessment summarizes the vulnerability of the MID areas in context with the Community Lifelines. The Local Mitigation Handbook recommends implementing problem statements to quickly summarize the risks to the impacted community.⁴³ These problem statements are intended to break down the major issues into a sentence or short paragraph. After a review of the hazards, risks, and Community Lifeline vulnerability, the following problem statements have been defined for the MID areas:

- Hurricanes, coastal hazards, and flood hazards are the greatest risk to the MID areas and account for the largest amount of damage and loss of life in the MID areas.
- Hurricanes, coastal hazards, flood hazards, and other weather-related natural hazards are expected to increase in probability and severity due to changes in climate and sea level rise.
- Losses to the Food, Water, and Sheltering Community Lifeline are the most critical mitigation need based on an analysis of FEMA-documented damage.
- Mitigating losses to the Safety and Security, Transportation, and Energy Community Lifelines are the next most pressing needs, in descending order.

These problem statements inform the cardinal direction of the CDBG-MIT funded activities and drive the nature of the public and stakeholder engagement.

The Risk Assessment drives toward solutions that primarily address impacts from coastal hazards and flooding. However, the work done to categorize all hazards is foundational to the understanding of the area. NCORR will work toward considering all risks in program and project implementation, so that other risks in impacted communities are not ignored or worsened by a course of action intended to limit losses from coastal hazards and floods. Additionally, the work done on this risk assessment may be useful in using CDBG funding sources to address non-flood and non-coastal hazard risks in the future.

2.6 CDBG-DR Considerations

The primary focus of CDBG-MIT funding is a forward looking, risk-based approach to implementing projects designed to reduce future losses from disaster. Conversely, CDBG-DR is a responsive funding source intended to repair, restore, and rehabilitate communities after a disaster.

During program design for CDBG-MIT, it became apparent that lessons learned and data gathered implementing CDBG-DR programs would be a major consideration for CDBG-MIT programming. In this instance, the unmet housing recovery need for Hurricane Matthew and Hurricane Florence informs a major priority for CDBG-MIT.

⁴³ Federal Emergency Management Agency. *Local Mitigation Planning Handbook*. 5-19. https://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf

2.6.1 Buyout and Acquisition

A spatial analysis of areas with high concentrations of homeowners interested in HMGP acquisition, repetitive loss and severe repetitive loss property, and/or areas with homeowners likely to meet the Low/Mod Buyout (LMB) and Low/Mod Housing Incentive (LMHI) first defined in 82 FR 61322 indicates that more than 2,300 owner-occupied properties are strong candidates for a buyout or acquisition activity in both Hurricane Matthew and Hurricane Florence MID areas. These figures will be adjusted as they are finalized. Community stakeholder and resident engagement continues to develop to inform the final buyout and acquisition program demand.

Table 21 - Identified Buyout Need Summary

| MID Area | Approximate residential property located in buyout zones | Approximate Buyout/Acquisition Need |
|-----------------|---|--|
| Matthew | 1,597 | \$ 146,576,900 |
| Florence | 705 | \$ 114,136,400 |
| Total | 2,302 | \$ 260,713,300 |

To partially address the buyout need, \$25 million of CDBG-DR funds received for Hurricane Matthew recovery have been allocated to buyout activities. The buyout program is expected to be greatly oversubscribed in Hurricane Matthew-impacted areas alone, without consideration for the buyout need in Hurricane Florence impacted areas which contain greater concentrations of repetitive loss and severe repetitive loss property. This estimate also does not consider the buyout or acquisition of vacant land, multi-family residential, or commercial property, which could greatly increase the funds required to execute the buyout and acquisition objective.

Funding additional buyout addresses a major recovery need, strengthens every Community Lifeline directly or indirectly, and aligns with the State priority to acquire vulnerable property (detailed in Part 2.7 below). Therefore buyout activities constitute a major programmatic allocation.

2.6.2 Housing Development

Considered in the buyout and acquisition context, the need for additional housing development is evident. As property owners voluntarily participate in buyout and acquisition programs, there is a growing need for affordable housing solutions for those buyout and acquisition participants to relocate to.

With the use of CDBG-MIT funds, there is an opportunity to develop housing that responds to the new housing need created by large-scale property acquisition. Unlike traditional CDBG-DR programs which repair or reconstruct in place, housing development in the CDBG-MIT context

will be focused on resilient, green design located outside of the 100-year floodplain. As buyout is focused neighborhood-by-neighborhood, a neighborhood-based approach to housing development is preferred so that the parts of a community which elect to buyout may ideally relocate together. To the extent that is feasible and practicable, housing development would look to create innovative, clustered development to meet that housing need.

In assessing a cost to execute this activity, the HOME Investment Partnerships Program maximum per-unit subsidy is used as the baseline for assistance for each unit needed. HUD published a Notice establishing an interim policy to use the Section 234 - Condominium Housing basic mortgage limits, for elevator-type projects, as an alternative to the Section 221(d)(3) of the National Housing Act (12 U.S.C. 17151) limits in order to determine the maximum amount of HOME funds that may be invested on a per-unit basis in HOME-assisted housing projects.⁴⁴ While a potential housing project will not be based on HOME requirements, these subsidy limits are a starting point for estimating the cost of construction. The estimated cost is based on a three bedroom replacement house, at \$112,611 a unit as set forth in 84 FR 20386 published May 9, 2019.

Using the 2,302 identified properties potentially requiring replacement housing due to the buyout and acquisition program need, and with an understanding that buyout and acquisition is voluntary and will therefore will not reach full participation within that population, and additionally accounting for other housing solutions provided during buyout such as buyout program incentives rather than direct replacement housing, the following matrix is developed to estimate the potential cost of the affordable housing need relative to the mitigation needs assessment.

Table 22 - Additional Need for Affordable Housing in Context with Buyout/Acquisition

| Buyout w/ Affordable Housing Need | Units Needed | Estimated Cost of Affordable Housing |
|---|--------------|---|
| 10% Participation | 230 | \$ 25,923,052 |
| 20% Participation | 460 | \$ 51,846,104 |
| 30% Participation | 691 | \$ 77,769,157 |

Construction cost for affordable housing will be based on the actual cost of construction. The primary mechanism for this exercise will be the existing relationship formed between the North Carolina Housing Finance Agency (NCHFA), which has been subgranted funds from NCORR to execute the multi-family rental housing program for the CDBG-DR allocation.

⁴⁴ U.S. Department of Housing and Urban Development. *HOME Maximum Per-Unit Subsidy Limits*. <https://www.hudexchange.info/resource/2315/home-per-unit-subsidy/>

2.7 Assessing Priorities

In Section 5 of the HMP, the State outlines 27 actions to reduce risk. The selection of projects and proposed programs in this Action Plan aligns the HMP action priority list with selected projects. While the CDBG-MIT framework is not ideal to serve every action item, there is significant overlap between state priorities, the assessment of the data for community needs, and the CDBG eligible activities.

The HMP action items that most align with CDBG-MIT activities include:

- **NC-2.** Acquire, elevate, provide structural retrofits, and otherwise leverage resources to protect or mitigate risk to people and personal property such as residences and businesses.
- **NC-3.** Training local governments, state agencies, and other organizations on emergency management and mitigation.
- **NC-5.** Standardize technology between partners and determine software compatibility.
- **NC-6.** Work with local communities to promote changes in local policies, regulations, and activities such as land use, building codes, regional planning, improving storm drainage systems, and supporting the Community Rating System (CRS).
- **NC-14.** Provide useful data, studies, and other products that can help local communities better understand their risks.
- **NC-18.** Assist counties and stakeholders in developing their fuel plans for back-up fuel.
- **NC-25.** Engage with the North Carolina Housing Finance Agency to identify available funding that could be used for mitigation and discuss opportunities to collaborate.

NCORR recognizes that additional State priorities exist in the HMP, but to focus on the MID area risk reduction needs, these specific priorities are considered to be most strongly associated with CDBG-MIT funded interventions. For each CDBG-MIT activity defined below, the direct connection to the HMP action item is indicated.

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3.0 Long-Term Planning and Risk Mitigation Considerations

The limited funds available in the CDBG-MIT allocation provided to the State bounds the ability to fund a major planning activity. With the limited funds available, NCORR supports driving toward clear, actionable mitigation activities which are supported by a data-driven analysis of the mitigation need. An allocation of funds is available to fund local and regional planning events as well as to fund Action Plan development and good community outreach to inform future projects and programs. However, NCORR will revisit planning needs as projects and programs develop to ensure that activities undertaken with CDBG-MIT funds engage local, regional, State, and Federal partners to produce a data-driven, comprehensive analysis of the mitigation approaches funded in this Action Plan. This part of the Action Plan reviews the state of broad planning initiatives across the State, favoring actionable elements of building codes, land use, and flood risk protection.

3.1 Building Code Standards

In 2018, the North Carolina Department of Insurance's (NCDOI) Engineering and Codes Division developed the 2018 State Building Codes. Those Building Codes include:

- 2018 North Carolina State Administrative Code and Policies
- 2018 North Carolina State General Building Code
- 2018 North Carolina State Existing Building Code
- 2018 North Carolina State Residential Code
- 2018 North Carolina State Mechanical Code
- 2018 North Carolina State Plumbing Code
- 2018 North Carolina State Fuel Gas Code
- 2018 North Carolina State Fire Prevention Code
- 2018 North Carolina State Energy Conservation Code

The North Carolina Building Codes are updated approximately every four years and the current codes were adopted January 2019. Current building codes do consider floodplain construction requirements. Conservations and planning to update building codes happen in advance of the planned update length, and NCORR may have an opportunity at that time to coordinate with NCDOI on building code updates to meet the intent of the Notice to develop building codes and standards such as those in American Society of Civil Engineers' ASCE-24 "Flood Resistant Design" guidance.

3.1.1 Vertical Flood Elevation Protection

The Elevation Requirements set in North Carolina State building codes at R322.2.1 “Elevation Requirements” currently require elevation to above the base flood elevation (BFE) within the 100-year floodplain.⁴⁵ Earlier iterations of the building code required an additional foot above the base flood elevation within the 100-year floodplain (commonly referred to as a “freeboard” requirement).

In its current CDBG-DR implementation, NCORR requires that new or substantially improved residential structures are elevated two feet or more above the BFE or high water mark (if outside the floodplain). For new construction using CDBG-MIT funds, NCORR will remain consistent with this requirement and depending on the facts of the construction may require additional freeboard or other mitigation techniques to ensure that new construction is sufficiently protected.

3.2 Land Use and Zoning Policies

Land use and zoning practices, including adopting zoning regulation and amending zoning text or maps is as legislative policy choice entrusted to local elected officials. Plans provide a context to consider the long-term impact of individual land use decisions. Planning provides for public participation, coordination of programs and decisions, and the opportunity to set forth the basic policy choices that underlie a rational program of land use regulation. Although not mandated to do so, most populous North Carolina cities and counties have adopted plans.⁴⁶

The University of North Carolina’s School of Government identifies several plans typically adopted by the State’s local governments:

- **Comprehensive Plans.** Traditionally used by local governments as their principal planning tool, and includes land use, housing, transportation, community facilities, recreation, infrastructure, hazards, and other key community needs over a long time horizon. Elements of a Comprehensive Plan may also include:
 - **Land Use Plans.** Often included in the Comprehensive Plan but sometimes separately maintained, land use plans set land development priorities and future land use for the community.
 - **Neighborhood or Area Plans.** These plans are similar to the overall Comprehensive Plan, but apply only to a neighborhood, area, township, or other smaller designation and outlines specific goals and opportunities in those identified areas.

⁴⁵ International Code Council. *2018 North Carolina State Building Code: Residential Code*. https://codes.iccsafe.org/content/NCRC2018/chapter-3-building-planning#NCRC2018_Pt03_Ch03_SecR322

⁴⁶ University of North Carolina School of Government. *Planning and Zoning Law Bulletin Plan-Consistency Statements*. 5. https://www.sog.unc.edu/sites/www.sog.unc.edu/files/reports/20180809_PZLB27_2018-11-30_0.pdf

- **Specialized Plans.** Specialized plans include plans for historic district preservation, transportation or mobility plans, hazard mitigation plans, and other plans specific to a special need or purpose for the area.
- **Functional Plans.** Functional Plans look at how government functions, such as transportation, water and sewer services, or parks and recreation, will be carried out in the future.
- **Strategic Plans.** These plans focus on a few key issues, have a shorter time frame (such as two to five years), identify specific implementation responsibility and time line, and have a regular follow-up on the results. These plans often have strong participation from community groups and leaders.

These plans present opportunities for local areas to incorporate natural hazard mitigation through the adoption of sound land use and zoning practices consistent with known threats to the community. A 2018 survey of local governments conducted by the University of North Carolina found that an increasing number of cities and counties, particularly the more-populous cities and counties, have adopted a comprehensive plan. While 70 percent of all responding jurisdictions report having adopted a comprehensive plan, over 90 percent of the cities with populations over ten thousand have adopted a plan (compared with 70 percent in 1998 and 75 percent in 2008).

Plan-adoption rates decrease for cities with smaller populations: 79 percent for cities with populations between one thousand and ten thousand, and only 26 percent for cities with populations under one thousand. Of the responding counties, 78 percent report having adopted a comprehensive plan.⁴⁷

However, adopted plans are not always updated regularly. The same 2018 survey found that about half of the adopted plans have been updated within the past five years, about a quarter were last updated within the past six to ten years, and a quarter were last updated more than ten years ago. These percentages are about the same for cities and counties and across all population sizes.

Table 23 - Comprehensive Plan Adoption, State of North Carolina 2018

| Jurisdiction Population | Total Respondents | % Adopting Comprehensive Plan |
|-------------------------|-------------------|-------------------------------|
| Municipalities | | |
| Less than 1,000 | 74 | 26% |
| 1,000 - 10,000 | 119 | 79% |
| 11,000 - 24,000 | 38 | 92% |

⁴⁷ University of North Carolina School of Government. *Planning and Zoning Law Bulletin Plan-Consistency Statements*. 6. https://www.sog.unc.edu/sites/www.sog.unc.edu/files/reports/20180809_PZLB27_2018-11-30_0.pdf

| Jurisdiction Population | Total Respondents | % Adopting Comprehensive Plan |
|---------------------------|-------------------|-------------------------------|
| Greater than 25,000 | 31 | 94% |
| Municipality Total | 262 | 68% |
| Counties | | |
| Less than 25,000 | 20 | 80% |
| Greater than 25,000 | 58 | 78% |
| County Total | 78 | 78% |
| Total Responses | 340 | 70% |

Table 24 - Plan update Frequency, State of North Carolina 2018

| Jurisdiction Population | Total Respondents | Last Plan Update | | |
|---------------------------|-------------------|------------------|------------------|----------------|
| | | < 5 Years Ago | 6 - 10 Years Ago | > 10 Years Ago |
| Municipalities | | | | |
| Less than 1,000 | 19 | 53% | 32% | 16% |
| 1,000 - 10,000 | 92 | 49% | 26% | 25% |
| 11,000 - 24,000 | 34 | 41% | 50% | 9% |
| Greater than 25,000 | 30 | 40% | 30% | 27% |
| Municipality Total | 175 | 46% | 32% | 21% |
| Counties | | | | |
| Less than 25,000 | 16 | 44% | 25% | 31% |
| Greater than 25,000 | 45 | 51% | 27% | 22% |
| County Total | 61 | 49% | 26% | 25% |
| Total Responses | 236 | 47% | 31% | 22% |

Even a plan updated five years ago, a reasonable timeframe between plan revisions, is missing key information about the impacts of Hurricanes Matthew and Florence. These storms dramatically reshaped the planning landscape in impacted areas and may have fundamentally shifted community development priorities.

3.3 Flood Mitigation Efforts

As the CDBG-MIT allocation is directly tied to the impacts of flooding from Hurricane Matthew, additional consideration is paid to flood mitigation efforts. Already considered are the vertical flood elevation height requirements discussed in Part 3.1.1 above. NCORR commits to ensuring responsible floodplain and wetland management based on the history of flood mitigation efforts and the frequency and intensity of precipitation events.

3.3.1 High Wind

In addition to this vertical height requirement, NCORR will take into consideration high wind considerations for new or rehabilitated buildings. There are many informational resources available to safeguard against high wind conditions, including *FEMA 543: Risk Management Series Design Guide for Improving Critical Facility Safety from Flooding and High Winds*. FEMA 543 recommends incorporating hazard mitigation measures into all stages and at all levels of critical facility planning and design, for both new construction and the reconstruction and rehabilitation of existing facilities.⁴⁸ While the guidelines in FEMA 543 are applicable to critical facilities, they may also be applied to new construction of other buildings and infrastructure. In all instances, NCORR will defer to engineering and design experts to ensure that high wind hazards are addressed.

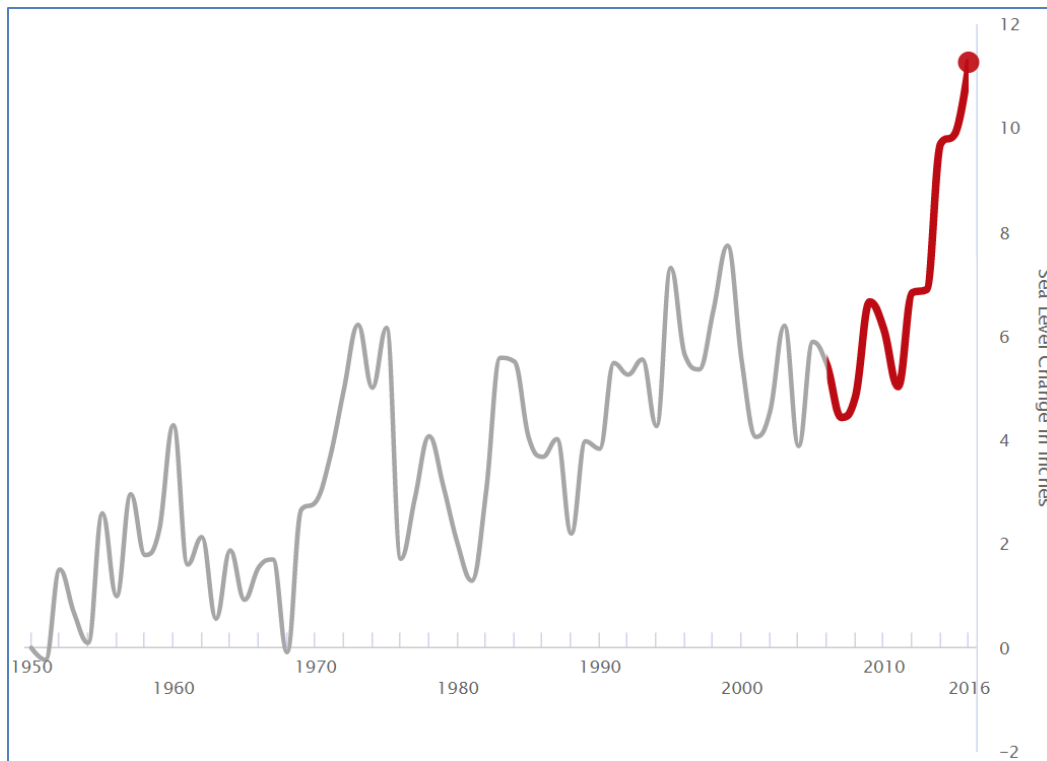
3.3.2 Sea Level Rise

In addressing flood mitigation, it is essential to the long-term planning process to also consider the effects of sea level rise on the coastal communities of the State. According to National Oceanic and Atmospheric Administration (NOAA) data, the sea level off of the coast of North Carolina has risen 11 inches higher than its 1950 level.⁴⁹ Sea level rise is of increasing concern to vulnerable coastal areas of the State because sea level rise has been accelerating over the past 10 years and is now rising an average of one inch every two years. These measurements are conducted with sound methodology and have become increasingly accurate, leading to the conclusion that sea level rise is a significant threat to coastal areas of the State.⁵⁰

⁴⁸ Federal Emergency Management Agency. *Risk Management Series Design Guide for Improving Critical Facility Safety from Flooding and High Winds*. https://www.fema.gov/media-library-data/20130726-1557-20490-1542/fema543_complete.pdf

⁴⁹ National Oceanic and Atmospheric Administration. *Tides and Currents Data, Wilmington, NC*. <https://tidesandcurrents.noaa.gov/waterlevels.html?id=8658120&units=standard&bdate=19500101&edate=20171231&timezone=GMT&datum=MSL&interval=m&action=data>

⁵⁰ National Oceanic and Atmospheric Administration. *FAQ – Tide Predictions and Data*. <https://tidesandcurrents.noaa.gov/faq2.html>

Figure 12 - Sea Level Rise in inches, Wilmington, NC⁵¹

NCORR commits to using the best available data to determine whether structures would be at risk of sea level rise and avoid construction or rehabilitation of structures which may be subject to increased risk due to sea level rise and coastal erosion.

3.4 Local and Regional Planning Coordination

The following entities have been engaged in the development of CDBG-MIT activities and are expected to continue to play a role in CDBG-MIT implementation:

- **North Carolina Department of Public Safety (NCDPS).** As an office within NCDPS, NCORR has the full support of NCDPS.
- **North Carolina Emergency Management (NCEM).** The State Hazard Mitigation Officer (SHMO), Steve McGugan, regularly meets with NCORR staff to discuss HMGP activities and how CDBG funds can best complement NCEM objectives.
- **North Carolina Department of Transportation (NCDOT).** NCDOT staff have met with NCORR staff to discuss major infrastructure plans which may affect NCORR decision making and long-term mitigation planning.
- **North Carolina Department of Environmental Quality (NCDEQ).** The NCDEQ, along with its Division of Coastal Management (NCDQM) have coordinated with NCORR staff on

⁵¹ SeaLevelRise.org. *States: North Carolina.* <https://sealevelrise.org/states/north-carolina/>

coastal management and coastal climate resilience initiatives. Specific initiatives, funding opportunities, and programs have been identified by NCDRCM for CDBG-MIT consideration.

3.5 Flood Insurance Coverage

With respect to flood insurance, CDBG-MIT funded homeowners of a property located in a Special Flood Hazard Area (SFHA) must obtain and maintain flood insurance in the amount and for the duration prescribed in FEMA's National Flood Insurance Program. Section 102(a) of the Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a) mandates the purchase of flood insurance protection for CDBG-MIT (a HUD-assisted property) within a SFHA, when CDBG-MIT is used to finance acquisition or construction, including rehabilitation. NCORR will encourage the purchase of flood insurance outside of SFHA's, but carrying flood insurance outside of SFHA's is not a requirement.

Section 582 of the National Flood Insurance Reform Act of 1994, as amended, (42 U.S.C. 5154a) prohibits flood disaster assistance in certain circumstances. In general, it provides that no Federal disaster relief assistance made available in a flood disaster area may be used to make a payment (including any loan assistance payment) to a person for "repair, replacement, or restoration" for damage to any personal, residential, or commercial property if that person at any time has received Federal flood disaster assistance that was conditioned on the person first having obtained flood insurance under applicable Federal law and the person has subsequently failed to obtain and maintain flood insurance as required under applicable Federal law on such property. This means that CDBG-MIT assistance may not be provided for the repair, replacement, or restoration of a property to a person who has failed to meet this requirement.

Section 582 also imposes a responsibility on NCORR and its subrecipients to inform property owners receiving assistance that triggers the flood insurance purchase requirement that they have a statutory responsibility to notify any transferee of the requirement to obtain and maintain flood insurance in writing and to maintain such written notification in the documents evidencing the transfer of the property, and that the transferring owner may be liable if he or she fails to do so. These requirements are enumerated at <http://uscode.house.gov/view.xhtml?req=granuleid:U.S.C.-prelim-title42-section5154a&num=0&edition=prelim>.

NCORR will detail a process for checking flood insurance compliance for CDBG-MIT grant fund recipients in its policies and procedures to ensure compliance with this requirement.

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4.0 Mitigation Projects and Leverage

NCORR commits to advancing mitigation programs and activities that advance long term resilience to current and future hazards. NCORR also aligns its CDBG-MIT programs or projects with other planned federal, state, regional, or local capital improvements, where feasible.

Each proposed mitigation program or project must define how:

1. It will advance long-term resilience.
2. Align with other planned capital improvements.
3. Promote community-level and regional planning for current and future disaster recovery efforts and additional mitigation investment.

The recovery effort for the State of North Carolina has been assisted through the provision of multiple funding sources. Primarily of interest to long-term mitigation are funds received for FEMA Public Assistance (PA), FEMA Individual Assistance (IA), FEMA Hazard Mitigation Grant Program (HMGP), Small Business Administration (SBA) Disaster Loans, Department of Transportation (DOT) funds, and U.S. Army Corps of Engineers (USACE) funds.

Currently, a list of ongoing USACE projects does not indicate that there is significant priority overlap with CDBG-MIT activities.⁵² If new USACE projects are introduced, NCORR will establish whether they would be a vehicle for leverage for CDBG-MIT funds. Given the limited CDBG-MIT funds available to the State, it is difficult to meaningfully interface with the major infrastructure projects that the USACE typically undertakes.

The North Carolina Department of Transportation (NCDOT) has been a communicative partner in mitigation planning. NCDOT has shared information on potential future projects to lend context to multiple mitigation approaches, including potential buyout areas and Disaster Risk Reduction Areas (DRRAs). As these projects have not been approved for construction and are in the early planning stages, they do not yet present a leverage opportunity for CDBG-MIT programs. As NCDOT projects develop, NCORR will reassess the viability of a leverage opportunity with NCDOT projects.

FEMA IA and SBA Disaster Loan funds received present a leverage opportunity for buyout and acquisition activities as well as affordable housing programming. Where feasible, CDBG-MIT funds will be combined with FEMA IA and SBA funds to provide additional funds for mitigation activities such as a buyout and acquisition or a housing solution. Similar to its CDBG-DR activities, NCORR will have policies and processes in place to ensure that CDBG-MIT is not duplicated with other assistance for the same purpose.

⁵² United States Army Corps of Engineers. *American Recovery and Reinvestment Act of 2009 Civil Works Construction*. <https://www.usace.army.mil/Portals/2/docs/recovery/ComprehensiveConstruction.pdf>.

For affordable housing mitigation projects, NCORR endeavors to partner with the North Carolina Housing Finance Authority (NCHFA) to leverage their resources but also to leverage the Low Income Housing Tax Credit (LIHTC) program. CDBG-MIT will provide a match source of funding for LIHTC funded development through a competitive process with NCHFA. Favorable leverage opportunities will receive greater prioritization for CDBG-MIT funding.

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5.0 Natural Infrastructure

Beyond the specific methods needed to assess and compare grey infrastructure against natural infrastructure options relative to their utility to mitigate risk, a framework is required that would provide guidance to North Carolina on how to consider natural infrastructure solutions in its envisioned CDBG-MIT projects. NCORR is focused on how municipalities are advancing adaptation to climate change through the management of natural infrastructure assets that provide municipal and ecosystem services. Such focus provides effective solutions for minimizing coastal flooding, erosion, and runoff, as do man-made systems that mimic natural processes—known as natural infrastructure. Across North Carolina, aging water infrastructure is creating challenges for water management. Combined sewer systems are pumping toxins into estuaries, bays, lakes and other water bodies and overflowing during extreme precipitation events into urban and residential areas. At the same time, coastal communities are being heavily damaged from extreme storm events and sea level rise. Experts agree that natural infrastructure such as healthy wetlands can provide many of the same benefits of traditional man-made infrastructure at a much lower investment and maintenance cost. Natural infrastructure approaches include forest, floodplain and wetland protection, watershed restoration, wetland restoration, permeable pavement and driveways; green roofs; and natural areas incorporated into city designs, and conservation easements. A natural infrastructure approach represents a successful and cost efficient way to protect riverine and coastal communities. While there is much to be done in the way of design and restoration in coastal communities, this plan, due the preponderance of MID counties and communities and their locations, will focus on upstream rather than coastal natural infrastructure.

Ordinances and codes are the regulatory mechanisms available to local governments for land use and natural resource management. Though local governments in North Carolina have no preexisting grants of power, the General Assembly has made both general grants of power to cities and counties and specific grants of power to regulate other activities under certain special circumstances. Cities and counties are generally allowed to “by ordinance define, regulate, prohibit, or abate acts, omissions, or conditions detrimental to the health, safety, or welfare of its citizens and the peace and dignity of the county; and may define and abate nuisances.” Other grants of authority are made to address specific issues, including the environmental impacts of development, and are found in other statutes.

Many of the resources discussed here are written as separate ordinances but could also be modified to work in a unified ordinance framework. Some of the ordinances are written as overlay ordinances, which are used to establish additional development requirements in specific areas of a community, such as environmentally sensitive areas. The additional requirements are superimposed over, or “overlay”, the base regulations already in place.

Many local governments in North Carolina are already required to adopt stormwater regulatory programs due to the urbanizing nature of the community or its location near sensitive resources (e.g., impaired waters, coastal locations). As part of these regulatory programs, North Carolina Department of Environment and Natural Resources collaborated with the University of North Carolina (NC SU) School of Government to develop several model stormwater ordinances that local governments can look to for guidance.

The Phase II Stormwater Model Ordinance was developed to meet requirements under the federal Clean Water Act for cities and towns that operate municipal separate storm sewer systems (MS4s) located in urbanized areas and serving a population of fewer than 100,000. The language includes performance standards that address quality, as well as the magnitude and rate of runoff.

The Model Tree Protection Ordinance provides communities with guidance for retaining trees. Tree protection ordinances can mitigate some of the impact of development while also ensuring community benefits, such as increased property values, stormwater runoff management, cooling, and air quality. The model ordinance sets out a framework for local governments and stakeholders to follow in deciding how to protect trees in their communities.

This particular action plan proposes Buyout/Acquisition and Affordable Housing programming. As such, multiple opportunities exist to capitalize on natural infrastructure amelioration and restoration. For Buyout/Acquisition undertakings, this would include conversion of buyout zone housing into seasonal floodplains that have had structures demolished and are landscaped riparian buffer zones containing marginal native species returned to units of government/local government for permanent deed restrictions preventing re-development. These seasonal floodplains will serve to impound and filter both storm and floodwaters.

Affordable housing, in particular multifamily and clustered development, are encouraged as part of their architecture and engineering final design to include landscaping design. Ideal designs would limit the use of non-rain permeable hardscapes and encourage rain permeable surfaces, xeriscaping, as well as the onsite disposal of filtered graywater, run-off from downspouts and gutters, expelled sump pump water, as well as run-off from non-rain permeable surfaces.

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6.0 Construction Standards

NCORR acknowledges the emphasis in the Notice to institute green building design, specifically when executing new construction and will follow best practices such as those provided by the U.S. Department of Energy's Guidelines for Home Energy Professionals—Professional Certifications and Standard Work Specifications.

For all construction, the project scope will incorporate Green Building materials to the extent feasible according to specific project scope. Materials must meet established industry-recognized standard that have achieved certification under at least one of the following programs:

- ENERGY STAR (Certified Homes or Multifamily High-Rise).
- Enterprise Green Communities.
- LEED (New Construction, Homes, Midrise, Existing Buildings Operations and Maintenance, or Neighborhood Development).
- ICC-700 National Green Building Standard, (v) EPA Indoor AirPlus (ENERGY STAR a prerequisite).
- Any other equivalent comprehensive green building program.

NCORR will implement and monitor construction results to ensure the safety of residents and the quality of homes assisted through the program. All new housing created in whole or in part with CDGB-MIT funds will comply with current HUD Housing Quality Standards (HQS).

Contractor compliance will be maintained through the review and approval of monthly project performance reports, financial status reports, and documented requests for reimbursement throughout the contract period. The State will utilize the HUD-provided contract reporting template (for PL 113-2) for upload to the Disaster Recovery Grant Reporting (DRGR) on a quarterly basis: <https://www.hudexchange.info/resource/3898/public-law-113-2-contract-reporting-template/>.

6.1 Broadband

Any substantial rehabilitation, as defined by 24 CFR 5.100, or new construction of a building with more than four rental units must include installation of broadband infrastructure, except where it is documented that:

1. The location of the new construction or substantial rehabilitation makes installation of broadband infrastructure infeasible, or

2. The cost of installing broadband infrastructure would result in a fundamental alteration in the nature of its program or activity or in an undue financial burden, or
3. The structure of the housing to be substantially rehabilitated makes installation of broadband infrastructure infeasible.

6.2 Cost Verification

At all times, construction costs must remain reasonable and consistent with market costs at the time and place of construction. NCORR uses the service of a third-party construction management firm to assist in determining that construction costs are reasonable and necessary.

If infrastructure projects are implemented in a future change to the Action Plan, NCORR will establish specific cost controls for infrastructure.

NCORR will review projects and test for compliance with financial standards and procedures including procurement practices and adherence to cost reasonableness for all operating costs and grant-funded activities. All program expenditures will be evaluated to ensure they are:

- Necessary and reasonable.
- Allocable according to the CDBG contract.
- Authorized or not prohibited under state/local laws and regulations.
- Conform to limitations or exclusions (laws, terms, conditions of award, etc.).
- Consistent with policies, regulations and procedures.
- Adequately documented.
- Compliant with all Cross Cutting Federal Requirement including Uniform Administrative Requirements at 2 CFR 200.

6.3 Operation and Maintenance Plans

Currently, NCORR does not plan to fund infrastructure projects. However, some housing projects may require operations and maintenance plans at the discretion of NCHFA. CDBG-MIT funds may not be applied to the operation and maintenance of those facilities, and instead NCORR will require these projects to include a plan for operation and maintenance.

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7.0 Minimizing Displacement and Ensuring Accessibility

NCORR does not anticipate funding rehabilitation, repair, or reconstruction with CDBG-MIT funds that would trigger the Uniform Relocation Assistance (URA) Act. However, NCORR has an active Uniform Relocation Assistance Plan (URA) plan and process in place if URA were to be triggered by an NCORR activity. URA is federally mandated and NCORR has increased its capacity to administer URA requirements.

In practice, when a tenant is displaced by a CDBG-MIT activity, relocation case managers are assigned to both owners and tenants work with applicants to coordinate activities and communicate updates in real time concerning when to expect to move out of their residences, assist the displaced individuals with securing temporary housing arrangements, and all other aspects of moving belongings. One of the case manager's primary goals is to minimize the time that the tenant/owner will be impacted by coordinating the construction calendar in real time and during construction, keeping the displaced individual updated on the construction progress and communicating an expected timeline for construction completion and eventual move in.

To ensure accessibility for applicants, NCORR has adopted a Section 504/Americans with Disabilities Act (ADA) policy which ensures the full right to reasonable accommodations by all program participants. Under this policy, case managers shall assess the specific needs of each program beneficiary and determine if a 504/ADA modification is required based on the family composition members. All public facilities that are federally assisted shall also exceed the minimum threshold for 504/ADA compliance. Multifamily and other housing development programs will also be required to have a certain set-aside of fully compliant 504/ADA units of varying sizes to accommodate eligible applicants. Along with single family programs, the multifamily rental programs will be required to have an architect's/engineer's signature on a form stating that the designed unit meets 504/ADA compliance. Failure to deliver the appropriately constructed ADA/504 compliant unit(s) will result in the construction firm not being paid and in breach of contract until the deficiencies are corrected.

As was evidenced in the first rounds of public hearings in Robeson, Edgecombe, and Craven Counties on October 14 through October 16, 2019 for the input for this Mitigation Action Plan, each facility hosting the public hearing was fully accessible and presentations were made simultaneously for individuals with hearing impairment (accommodations included sign language interpretation as well as text projected onto a screen). The transcription was translated into Spanish in real-time and printed materials were also translated into Spanish, which according to NCORR's accepted Language Accessibility Program (LAP), is the largest non-English spoken language in North Carolina. North Carolina qualifies as a safe harbor state in that over 5% of its population speaks another primary language outside of English in the home. The adopted LAP is cognizant of these demographics and offers print material in Spanish and will provide other language translation services as needed.

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8.0 Activities and Allocation of Funds

The most significant consideration in developing CDBG-MIT activities and the allocation of funds is the Mitigation Needs Assessment. This assessment, found above, is comprised of an analysis of the State Hazard Mitigation Plan as well as data from the ongoing CDBG-DR funded State recovery. Mitigation activities are also funded in context with threats to Community Lifelines.

8.1 Connection between Mitigation Activities and Identified Risks

In review of the Mitigation Needs Assessment and threats to Community Lifelines, funding a substantial buyout and acquisition program is of primary importance for the State of North Carolina. Buyout and acquisition programs remove vulnerable people and property from harm's way, greatly reducing the expectation of future investment in the recovery of those people and property. Additionally buyout and acquisition relieves strain on every Community Lifeline. Finally, buyout and acquisition is in alignment with a major priority of the State's Hazard Mitigation Plan.

A second component of the suite of programs implemented with CDBG-MIT is resilient affordable housing. As the investment in buyout and acquisition is one of the largest ever undertaken by the State, a complementary investment in providing safe, affordable housing for those bought out and other individuals in impacted communities is another major funding priority. Traditionally, new housing construction is an ineligible CDBG-funded activity pursuant to 24 CFR §570.207(b)(3) – however, the Notice provides a waiver of this provision to permit new housing construction that addresses disaster risks identified in the grantee's Mitigation Needs Assessment. The Notice goes on to require construction standards for new construction, reconstruction, or rehabilitated housing.

Resilient affordable housing is supported in the Mitigation Needs Assessment in Part 2.3.7 above, especially Figure 8 - LMI Block Groups and the 100-year Floodplain. Relocating individuals which have accepted a buyout and LMI individuals out of the 100-year floodplain is a major priority of the mitigation funding. Both the need for buyout and affordable housing need were major components heard from the public outreach events held before publication of this Action Plan.

In accordance with the Notice, the Action Plan must identify how the proposed use of funds 1) meet the definition of mitigation activities; 2) address the current and future risks as identified in the Mitigation Needs Assessment; 3) will be CDBG-eligible activities under title I of the Housing and Community Development Act (HCDA) or otherwise eligible pursuant to a waiver or alternative requirement; and 4) will meet a national objective. Therefore, for each program or project identified for CDBG-MIT funding, NCORR will specify the connection to:

1. The State Enhanced Hazard Mitigation Plan “Action Item”.
2. The Community Lifeline weakness addressed through the mitigation activity.
3. The CDBG-eligible activity as set forth in Title I of the Housing and Community Development Act (HCDA) or through specific waiver provided by HUD.
4. The HUD National Objective criteria satisfied through activity execution.

For each allocation, the reference to the State Enhanced Mitigation Plan Action Item will be the numbered priority stated in the HMP. A detailed list of Action Items is included in Part 2.7 above. The CDBG-eligible activity is presented as the subsection of the Housing and Community Development Act, or specific waiver. The HUD National Objective criteria include the following:

- **LMI (Low- and moderate-income).** Activities which benefit low- and moderate-income individuals, such as providing an area benefit to an LMI area, establishing benefits to limited clientele, or housing LMI individuals and households.
- **LMB (Low/Mod Buyout).** Set by HUD in 82 FR 36825 to allow for meeting a National Objective when CDBG-MIT funds are used for a buyout award to acquire housing owned by a qualifying LMI household, where the award amount (including optional relocation assistance) is greater than the post-disaster (current) fair market value of that property.
- **LMHI (Low/Mod Housing Incentive).** Set by HUD in 82 FR 36825 to allow for meeting a National Objective when CDBG-MIT funds are used for a housing incentive award, tied to the voluntary buyout or other voluntary acquisition of housing owned by a qualifying LMI household, for which the housing incentive is for the purpose of moving outside of the affected floodplain or to a lower-risk area; or when the housing incentive is for the purpose of providing or improving residential structures that, upon completion, will be occupied by an LMI household.
- **UNM (Urgent Need Mitigation).** Set by HUD in the Notice to allow for certain mitigation activities. To meet the UNM National Objective, NCORR must document that the activity addresses the current and future risks as identified in the Mitigation Needs Assessment of most impacted and distressed areas and will result in a measurable and verifiable reduction in the risk of loss of life and property.

Some CDBG-MIT activities align with the unmet recovery need and have some functional overlap with CDBG-DR activities. Activities where a CDBG-MIT activity is used in combination with CDBG-DR funds already allocated will be indicated in the activity description.

8.2 Allocations and Programming

The total CDBG-MIT allocation set forth in PL 115-123 is \$168,067,000. NCORR will set aside five percent of these funds (\$8,403,350) for administrative costs associated with the mitigation activities described below. Another five percent of the funds will be set aside for planning related activities, such as Action Plan development, public outreach, and coordination on future

planning with local and regional coordinating entities. The remaining \$159,663,650 will be allocated to multiple mitigation activities defined in Parts 8.5 through 8.6 below.

Following the Mitigation Needs Assessment, lessons learned from CDBG-DR, and from community and stakeholder input, 70 percent of CDBG-MIT funds will be allocated to Strategic Buyout and Acquisition. The remaining 25 percent of CDBG-MIT funds will be allocated to the Resilient Affordable Housing Program.

The allocation of funds to MID areas reflects the unknown MID determinations made by HUD for Hurricane Florence. Upon review of the Hurricane Florence MID determinations, these allocation assumptions will be updated if necessary. Until such a time, the MID areas are assumed to be the Hurricane Matthew-established MID areas (Bladen, Columbus, Cumberland, Edgecombe, Robeson, and Wayne). The remaining 50 percent of the “non-MID” allocation is reserved for those areas believed to be most impacted and distressed by Hurricane Florence but not yet confirmed by HUD. After review of the Hurricane Florence MID determinations made by HUD, and after finalizing an Unmet Needs Analysis for Hurricane Florence, NCORR may support additional MID classification for Hurricane Florence impacted areas and update the allocations and the Mitigation Needs Assessment accordingly.

Table 25 - CDBG-MIT Allocations

| Program | Total | % of Total Allocation | \$ to LMI | % to LMI | \$ to HUD-defined MID areas | % to HUD-defined MID areas |
|--------------------------------------|----------------------|-----------------------|---------------------|------------|-----------------------------|----------------------------|
| Administrative Costs | \$8,403,350 | 5% | \$0 | 0% | \$4,201,675 | 50% |
| Planning Costs | \$8,403,350 | 5% | \$0 | 50% | \$4,201,675 | 50% |
| Strategic Buyout and Acquisition | \$109,243,550 | 65% | \$54,621,775 | 50% | \$54,621,775 | 50% |
| Resilient Affordable Housing Program | \$42,016,750 | 25% | \$42,016,750 | 100% | \$21,008,375 | 50% |
| Total | \$168,067,000 | 100% | \$96,638,525 | 58% | \$84,033,500 | 50% |

8.3 Method of Distribution and Delivery

In previous CDBG implementation and delivery, NCORR has consistently prioritized providing funds to communities that experienced the most significant damage from Hurricanes Matthew and Florence. NCORR continues to provide assistance to each impacted county, with a primary focus on those that were most impacted and distressed.

Previous allocations allowed for counties to enter into a subrecipient agreement (SRA) with NCORR to administer aspects of the grant. In consideration of NCORR’s increased capacity,

knowledge, and expertise since CDBG-DR funds were allocated, NCORR will administer the Strategic Buyout and Acquisition Program, utilizing SRAs to convey acquired land to counties or other entities for the purpose of operations and maintenance of the acquired parcel(s). CDBG-MIT funds will not be subgranted for operations and maintenance.

NCORR will work with its current subrecipient, NCHFA, to administer the Resilient Affordable Housing Program. NCORR is exploring expansion of the existing SRA for CDBG-DR funds to conform to the additional objectives and responsibilities set forth in this Action Plan. A change to the existing SRA will be reflected through Action Plan amendment.

8.4 LMI Priority

NCORR is committed to serving the LMI population of the impacted areas of the State. By waiver in the Notice, the requirement to expend 70 percent of CDBG funds on activities that benefit low- and moderate-income persons is replaced by a requirement to expend 50 percent of funds on LMI activities. This waiver does not change the need to prioritize the protection of LMI individuals.

Therefore, the affordable housing components of the CDBG-MIT allocation remain 100 percent allocated to the benefit of LMI individuals and households. To the extent that it is feasible, buyout and acquisition activities will also prioritize LMI individuals and households – although following HUD guidance on executing buyouts strategically, exceptions may be made as a means of acquiring contiguous parcels. To the maximum extent practicable, NCORR will attempt to avoid circumstances in which parcels that could not be acquired through a buyout remain alongside parcels that have been acquired through the grantee's buyout program. This may require executing buyouts that do not serve an LMI individual or household.

8.4.1 Vulnerable Populations

Of significant concern is housing which typically serves vulnerable populations, including transitional housing, permanent supportive housing, permanent housing serving individuals and families (including subpopulations) that are homeless and at-risk of homelessness, and public housing developments. NCORR does not intend to repair or rehabilitate existing housing, and will instead create new housing opportunities outside of the floodplain. An analysis of the housing need in these areas, which primarily correspond to buyout activity, will be conducted prior to project approval to ensure that these vulnerable populations are not ignored.

NCORR is considering individuals with access and functional needs that will require assistance with accessing and/or receiving CDBG-MIT disaster resources. These individuals may be children, senior citizens, persons with disabilities, from diverse cultures, transportation disadvantaged, homeless, having chronic medical disorders, and/or with limited English speaking, reading, having comprehension capacity, or altogether be non-English speaking.

NCORR is taking into account the provision of specialized resources that may include, but are not limited to, public or private social services, transportation accommodations, information, interpreters, translators, I-speak cards, and other services for those persons who may be visually or speech impaired during the Action Plan process free of charge. NCORR is taking care to ensure that individuals are able to access disaster recovery resources.

As previously stated in its Hurricane Matthew CDBG-DR Action Plan, the approach to recovering both homes and neighborhoods after Hurricane Matthew was to strategically examine where the damage occurred, and then focus its recovery efforts in those areas, paying special attention to the housing types, household types, and special needs of these unique communities. The strategy for mitigation and resiliency is similar in that NCORR will approach disaster resilience and climate change adaptation through a cross-sector lens that anticipates how a changing climate, extreme events, ecological degradation and their cascading effects will impact the needs of North Carolina's vulnerable populations.

In understanding that families and individuals with social vulnerabilities oftentimes face greater challenges in evacuating during a disaster event, NCORR analyzed FEMA Individual Assistance (IA) applications to determine which neighborhoods withstood the brunt of Hurricane Matthew's impact, took into account the impact of Hurricane Florence on some of the same impacted areas, and then examined the socio-economic and demographic profiles of these neighborhoods.

The analysis defines vulnerable populations as older residents (65 years old or older), persons with disabilities, neighborhoods where at least 51% of households earn less than 80% AMI (Low and Moderate Income neighborhoods), households with English language barriers, and households who do not own personal vehicles. This data is publicly available using the 2010 - 2014 American Community Survey (ACS), and is collected at the Census Tract-level (aligned with our definition of a neighborhood). To determine if a Census Tract has a disproportionate number of residents or families with social vulnerability, we compare the figures to state averages, or use HUD-standard benchmarks (i.e. majority of households are low income, for example).

Based on this analysis, there are five neighborhoods located in Lumberton, Princeville, Fayetteville, and Fair Bluff that were severely impacted. Of these five neighborhoods, an impacted family is more likely to be low income, minority, and without a family car than what is typical in the state. Among the other impacted neighborhoods, there are pockets of damage where residents have English language barriers, disabilities, and are also low income and minority neighborhoods. There are no substantially impacted neighborhoods with a disproportionate number of older residents. Even so, NCORR understands that many older households have substantial rebuilding challenges, and their needs will be addressed through local outreach efforts and prioritization among programs.

Additionally, North Carolina is committed to rebuilding damaged communities in a more resilient manner that affirmatively furthers fair housing opportunities to all residents. For this reason, the analysis identifies which impacted neighborhoods have a disproportionate concentration of minority populations as well as those with Limited English Proficiency. As these communities rebuild, the State will focus its planning and outreach efforts to ensure that rebuilding is equitable across all neighborhoods, including making provision for all information available about CDBG-MIT funding and programs in both English and Spanish and having appropriate translation, interpretation, and others services for persons with disabilities free of charge and accessible to the public in accordance with all HUD regulations and program guidelines.

| Town | County | Neighborhood | Disability | Language Barriers | Minority | LMI |
|---------------|---------|--------------|------------|-------------------|----------|-----|
| Rural | Wayne | 37171000901 | N | Y | N | N |
| Lumberton | Robeson | 37155961302 | N | Y | Y | N |
| Rural | Pender | 37141920501 | N | Y | Y | N |
| Seven Springs | Wayne | 37191000602 | N | Y | Y | N |
| Rural | Sampson | 37163971000 | N | Y | Y | N |
| Lumberton | Robeson | 37155960701 | N | Y | Y | Y |
| Rural | Wayne | 37191001000 | N | Y | N | N |

NCORR will follow Fair Housing and Civil Rights laws in the implementation of its programs. NCORR further understands the complexity of housing resilience in racially and ethnically concentrated areas, as well as concentrated areas of poverty. A recurring theme and comment from the community engagement during Action Plan development was the importance of place and home for impacted individuals. NCORR will coordinate with its partner NCHFA to determine the best course of action to provide equitable, meaningful housing solutions for all impacted individuals. To best serve vulnerable populations such as transitional housing, permanent supportive housing, permanent housing serving individuals and families (including subpopulations) that are homeless and at-risk of homelessness, and public housing developments, NCORR will engage local Public Housing Authorities (PHAs) to support resilience needs for public housing at the local level.

8.5 Strategic Buyout and Acquisition

| Strategic Buyout and Acquisition | | | |
|--|--|--|--|
| Allocation: \$109,243,550 | \$ to LMI: \$54,621,775 | \$ to MID: \$54,621,775 | % of Total Allocation: 65% |
| Primary Community Lifeline Impact: Food, Water, Sheltering | Hazard Mitigation Plan Action Item: NC-2 | National Objective: LMB, LMHI, UNM | CDBG-Eligibility Criteria: HCDA 105(a)(1), 105(a)(7), 105(a)(24) |

8.5.1 Program Description

The Hurricane Matthew CDBG-DR allocation has previously allocated \$25 million for buyout and acquisition activities. In assessing the community demand (driven by public outreach and stakeholder events), NCORR has identified increased need for buyout and acknowledges the advantages that buyout and acquisition have when compared to other mitigation techniques. Buyout and acquisition present the single most effective way to reduce future flood losses in vulnerable, storm impacted areas and is an ideal marriage of disaster recovery and long-term mitigation.

To that end, NCORR allocates \$109.2 million to the implementation of a Strategic Buyout and Acquisition Program. These funds will be implemented in a manner consistent with NCORR's policies and procedures for the existing \$25 million allocation. Applicants approved for participation in the Strategic Buyout Program may be eligible to receive funding based upon the pre-storm value for their damaged property minus any duplicative assistance. Applicants approved for participation in the Strategic Acquisition Program may be eligible to receive funding based upon the post-storm value of their property minus any duplicative assistance. The program will be administered by NCORR.

Properties purchased as a "buyout" will be maintained in perpetuity as buffer zones, while properties purchased as "acquisitions" will be eligible for redevelopment in the future in a resilient manner. The post-purchase fate of acquired properties will be determined by the State, in consultation with local officials, to ensure these properties best serve the future goals of the community. In some cases, the properties will remain undeveloped and be transformed into parks or other non-residential uses, while in other cases they may be redeveloped in a resilient manner. The final disposition plan will be further detailed by the State in the acquisition program guidelines, but disposition may include: the sale of property through an FMV and competitive

process for resilient redevelopment; the conversion of the property into public green space; and/or the donation of property to an eligible recipient to carry out eligible activities.

8.5.2 Maximum Award

The current Federal Housing Association (FHA) loan limits are the ceiling for the purchase price for properties that participate in this program. Incentives to homeowners are available above the purchase price, consistent with guidance on the implementation of the Low/Mod Buyout (LMB) and Low/Mod Housing Incentive (LMHI) National Objectives. The formula for calculation of these incentives will be defined in the NCORR Buyout Program Manual. NCORR commits to providing housing incentives that are necessary and reasonable based on the facts of each buyout activity completed.

8.5.3 Geographic Eligibility

The Buyout Program will prioritize eligible property owners located in Buyout Zones. These zones are comprised of priority areas, properties located in floodways, and/or Disaster Risk Reduction Areas (DRRAs). A DRRA is an area of increased hazard risk that is located outside of the 100-year floodplain. A priority area is a discrete area based on existing buyout or acquisition interest and/or repetitive loss property located within the 100-year floodplain. Portions of priority areas may extend beyond the 100-year floodplain to comply with the HUD guidance to avoid circumstances in which parcels that could not be acquired through a buyout remain alongside parcels that have been acquired through the grantee's buyout program. In this instance, areas outside of the 100-year floodplain are also considered to be a DRRA.

Homes must be located in one of the damaged-declared counties eligible to receive HUD funds for Strategic Acquisition and Buyout. In addition, properties identified for Buyout must be located in a floodway, floodplain, or designated DRRAs. As DRRAs are finalized in coordination with impacted areas and stakeholders, they will be included in the NCORR Buyout and Acquisition policies and procedures.

8.5.4 Priorities

The applicant priority for Strategic Buyout and Acquisition is:

1. LMI homeowners and households in owner-occupied property located in a designated priority zone (DRRA).
2. Non-LMI homeowners and households in owner-occupied property located in a designated priority zone (DRRA).
3. LMI homeowners and households in floodways.
4. Non-LMI homeowners and households in floodways.

5. LMI homeowners and households in owner-occupied designated Repetitive Loss/Severe Repetitive Loss (RL/SRL) property.
6. Non-LMI homeowners and households in owner-occupied designated Repetitive Loss/Severe Repetitive Loss (RL/SRL) property.
7. Nonresidential property and vacant land in priority zones (DRRAs).

8.5.5 Eligible Applicants

Applicants must own damaged properties as primary residences meeting the geographic eligibility requirements listed above.

8.5.6 Projected Start and End Date

As the Hurricane Matthew CDBG-DR program is beginning operation currently, this program may begin at the time of grant agreement signing from HUD.

- Start Date: April 2020
- End Date: April 2026

8.6 Resilient Affordable Housing

| Resilient Affordable Housing Program | | | |
|--|---|---------------------------------------|--|
| Allocation: \$42,016,750 | \$ to LMI: \$42,016,750 | \$ to MID: \$21,008,375 | % of Total Allocation: 25% |
| Primary Community Lifeline Impact: Food, Water, Sheltering | Hazard Mitigation Plan Action Item: NC-2, NC-25 | National Objective: LMI | CDBG-Eligibility Criteria: HCDA 105(a)(3), 105(a)(4), 105(a)(14) |

8.6.1 Program Description

To assist in the development of affordable housing, NCORR will fund two separate initiatives within the Resilient Affordable Housing Program. The first is Resilient Affordable Housing Development and the second is Resilient Public Housing Authority Support.

Resilient Affordable Housing Development primarily responds to the affordable housing need exacerbated by the amount of buyout contemplated by the Strategic Buyout and Acquisition Program. The objective is to provide funds to four percent Low Income Housing Tax Credit (LIHTC)

proposals competitively selected by NCHFA. These affordable housing developments will be located near areas of concentrated buyout to help alleviate the strain on affordable housing in those areas. NCHFA, in coordination with NCORR, will help select projects appropriate for the character and need for the proposed community, which may include multifamily development, new clustered single, duplex/triplex/fourplex buildings, or other resilient housing approaches. The allocation for Resilient Affordable Housing Development will be **\$32,016,750**.

Resilient Public Housing Support is provided to Public Housing Authorities (PHAs) to build or rehabilitate Public Housing outside of the floodplain, in less risky areas. These funds will be part of a funds leveraging package and opportunities to use these funds will be reviewed with each individual impacted PHA and provided based on need and a plan to execute resiliency measures to PHA housing. NCORR will open applications to PHAs and vet approaches to resiliency to select proposals that are most aligned with the intent of the CDBG-MIT allocation. The allocation for this initiative is **\$10,000,000**.

8.6.2 Maximum Award

The maximum award to NCHFA-funded affordable housing is based on actual need, not to exceed \$10 million in CDBG-MIT funding. As project costs are reviewed, the \$10 million cap may be exceeded if a compelling and significant benefit to resiliency or the local affordable housing stock is realized through project execution. When the cap is exceeded, NCORR will document such exceptions and the rationale behind the decision making process.

The maximum award to PHAs is dependent on the actual cost of construction, not to exceed \$3 million in CDBG-MIT funding. This cap is based on CDBG-DR costs for similar PHA work done under the Hurricane Matthew allocation.

8.6.3 Geographic Eligibility

NCORR will coordinate with NCHFA to identify projects that may be located nearby areas of concentrated buyout and acquisition. If this area is infeasible, NCORR will proceed to fund resilient development in other MID areas of the State.

PHAs must be located within a MID area. For both initiatives, construction must occur outside of the 100-year floodplain.

8.6.4 Priorities

The priority in implementation of these initiatives is the benefit to LMI individuals and households. Projects with significant leverage from other sources, such as LIHTC credits and other funds, will also receive prioritization.

8.6.5 Eligible Applicants

NCORR will accept applications from PHAs and will subgrant funds to NCHFA to select competitive proposals from qualified developers.

8.6.6 Projected Start and End Date

NCORR will open an application period for PHAs after receipt of the grant agreement from HUD. The application period for PHAs is expected to begin in April 2020. NCORR will coordinate with NCHFA following receipt of the grant agreement and expects a similar start date. New resilient construction may take additional time to complete when considering siting, design, development, and construction timeframes.

- Start Date: April 2020
- End Date: April 2028

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9.0 Amendments to the Action Plan

NCORR identifies the following criteria which constitute a substantial amendment:

- A change in program benefit or eligibility criteria.
- The addition or deletion of an activity.
- An allocation or reallocation of \$5 million or more.

Substantial Action Plan amendments will be provided for public comment for no less than 30 days, and can be found online at <https://www.rebuild.nc.gov/mitigation>. NCORR will notify HUD, but is not required to seek public comment, when it makes a plan amendment that is not substantial. HUD must be notified at least five business days before the amendment becomes effective. However, every amendment to the action plan (substantial and non-substantial) will be numbered sequentially and posted on the ReBuild NC website above.

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10.0 Schedule of Expenditures and Outcomes

NCORR maintains a schedule of expenditures and outcomes, periodically updated in accordance with its mandatory reporting to HUD. The schedule of expenditures and outcomes is located at <https://www.rebuild.nc.gov/reporting-and-compliance/reporting>.

In accordance with the Notice, 50 percent of funds will be expended within six years and 100 percent of funds will be expended within 12 years of HUD's grant execution date.

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11.0 Community Participation and Public Comment

NCORR values the input of its many impacted citizens and the decision makers and stakeholders that represent the vulnerable communities impacted by Hurricanes Matthew and Florence. As set forth in the Notice, NCORR was required to hold at least one public meeting prior to the completion of the Action Plan to receive feedback and guidance from citizens and stakeholders to shape project and program design, allocation amounts, and community needs.

The primary driver of community engagement and impacted jurisdictions is to course-correct the plan and to include elements that may have been overlooked. It is difficult to gauge reactions on sometimes divisive issues such as buyout, which has both significant supporters and understandable hesitance. NCORR will work to incorporate feedback into program development to ensure that the programs that are funded are correctly meeting the needs of the affected individuals.

11.1 Community Engagement

NCORR held a series of three public hearings prior to the completion of this Action Plan. These hearings were:

1. October 14, 2019 at the Robeson Community College in Lumberton, NC (Robeson County).
2. October 15, 2019 at the Edgecombe Community College in Tarboro, NC (Edgecombe County).
3. October 16, 2019 at Grover C. Fields Middle School in New Bern, NC (Craven County).

Total attendance at these meetings was 88 in Robeson County, 112 in Edgecombe County, and 73 in Craven County.

At these meetings, NCORR presented four information tables on Buyout, Planning and Resilience Opportunities, Infrastructure, and Affordable Housing. Hearing participants were guided by experts at each table in a discussion and review of options, approaches, and techniques in use nationwide for each activity type and a brief review of the developing approach that NCORR was taking for the use of the CDBG-MIT funds.

Table 26 - Buyout Community Input

| Buyout | | | |
|---|-----------|-----------|-----------|
| If the Buyout Program becomes available for your neighborhood, do you think you might participate in the program? | Robeson | Edgecombe | Craven |
| Yes | 4 | 13 | 13 |
| No | 3 | 3 | 2 |
| I need more information | 2 | 8 | 6 |
| It would depend on many factors | 2 | 6 | 4 |
| It would depend on what my neighbors do | 2 | 3 | 1 |
| It would depend on whether I can find a new home in the same area | 1 | 2 | 3 |
| Total Engagement | 14 | 35 | 29 |

Table 27 - Planning and Resilience Opportunities Community Input

| Planning and Resilience Opportunities | | | |
|---|-----------|-----------|-----------|
| What are the most important planning activities that North Carolina and impacted communities should undertake to mitigate the impact of future disasters? | Robeson | Edgecombe | Craven |
| Planning studies to identify mitigation opportunities | 6 | 14 | 10 |
| Changes to local and state zoning and building codes | 7 | 7 | 3 |
| Resilient construction guidelines | 4 | 7 | 10 |
| Training and building capacity of local government and nonprofits so they can better assist with mitigation activities | 3 | 10 | 12 |
| Total Engagement | 20 | 38 | 35 |

Table 28 – Infrastructure Community Input

| Infrastructure | | | |
|--|-----------|-----------|-----------|
| Which infrastructure improvements are most important to protect North Carolinians from future disasters? | Robeson | Edgecombe | Craven |
| Water and wastewater treatment facilities | 3 | 6 | 3 |
| Electric grids | 5 | 4 | 5 |
| Natural infrastructure | 9 | 12 | 9 |
| Transportation | 3 | 7 | 8 |
| Total Engagement | 20 | 29 | 24 |

Table 29 - Affordable Housing Community Input

| Affordable Housing | | | |
|--|-----------|-----------|-----------|
| My community needs more (vote for your top two choices)... | Robeson | Edgecombe | Craven |
| Affordable, quality homes for sale | 11 | 12 | 8 |
| Affordable, quality rental units | 10 | 13 | 12 |
| Housing choices outside of flood zones | 11 | 14 | 14 |
| Parks and recreational space | 5 | 3 | 5 |
| Community amenities (such as good schools, stores, etc.) | 4 | 8 | 4 |
| Total Engagement | 41 | 50 | 43 |

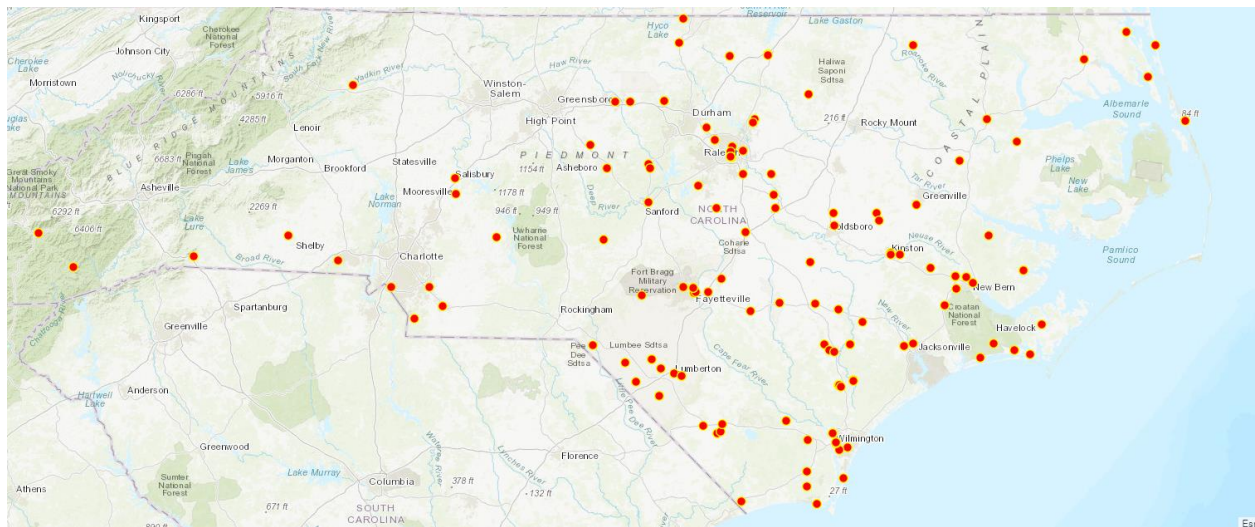
In addition to the information tables, the public hearing consisted of a brief presentation on CDBG-MIT funding facts and potential uses. At the conclusion of the public hearing, participants were permitted to enter a comment for the public record or write in their comments. These public comments, and their responses, are include in Appendix A.

Prior to completion of the Action Plan, NCORR will schedule additional public hearings to review the Action Plan content and hear from the impacted public on the projects and programs proposed for funding.

11.2 Impacted Jurisdiction Engagement

Given the massive geographical extent of the impacted area, physical meetings with every impacted jurisdiction was infeasible during development of the Action Plan. To coordinate with impacted jurisdictions and stakeholders, NCORR released a survey on Wednesday, October 9 through Monday, October 21, 2019. The survey was released to a list of 663 critical stakeholders including public housing authorities, planning organizations, town governments, city governments, and county governments. Of the 663 invited participants, 173 responded for a response rate of 26 percent.

Figure 13 - CDBG-MIT Survey Response Locations



In the survey, respondents were asked to describe their hazard vulnerability, mitigation measures that they think would be beneficial for their community, and what mitigation activities they have recently implemented or are currently implementing.

High level notes from the survey include:

- Key words include “Housing”, “Community”, “Water”, “Floods”, and “Affordable”.
- A geographic range was expressed in the survey results, indicating good participation statewide.
- Generally impacted jurisdictions appear to see the value in many mitigation approaches, including local planning, smart grids, and rainwater collection.
- Affordable Housing was in high demand with 42.77 percent of respondents ranking it at the highest priority level and another 17.92 percent ranking it at the second highest priority.

- Buyout was well supported, with 62.43 percent of respondents ranking it between the third, second, and first highest priority level.

Figure 14 - Impacted Jurisdiction Stakeholder Survey Word Cloud



The stakeholder survey demonstrated the various mitigation needs that exist in the CDBG-MIT areas. With additional funding, NCORR may be able to address these mitigation needs. In the meantime, NCORR endeavors to locate other resources and maximize the leverage of available funds to ensure that specific community needs are addressed.

11.3 Citizen Advisory Committee

In compliance with the Notice, NCORR will develop a Citizen Advisory Committee (CAC). The CAC will convene periodically (no less than twice a year) and review the mitigation needs of the State. The purpose of the CAC is to provide increased transparency in the implementation of CDBG-MIT funds, to solicit and respond to public comment and input regarding NCORR's mitigation activities, and to serve as an on-going public forum to continuously inform NCORR's CDBG-MIT projects and programs.

11.4 Response to Citizen Complaints and Appeals

NCORR shall provide a written response to every complaint relative to CDBG-MIT within fifteen (15) working days of receipt. The state will execute its Appeals Process in response to appeals received and will require any subrecipients to adopt a similar process. The process will be tiered whereby applicants will be able to appeal a decision and received further review from another level.

All sub-contractors and local government grantees will be required to develop an appeals and complaint procedure to handle all complaints or appeals from individuals who have applied for or have an interest in CDBG-MIT funding. A written appeal may be filed when dissatisfied with

program policies, eligibility, level of service or other issue by including the individual facts and circumstances as well as supporting documentation to justify the appeal.

Generally, the appeal should be filed with the administering entity or sub-contractor. The appeal will be reviewed by the administering entity with notification to NCORR for the purpose of securing technical assistance. If the appeal is denied or the applicant is dissatisfied with the decision, an appeal can be made to NCORR directly. If NCORR denies the appeal, the final step in the internal appeals process is to appeal to the Secretary of the Department of Public Safety. If the Secretary denies the appeal, the applicant will be notified regarding the process to appeal to the North Carolina Office of Administrative Hearings.

In programs that serve individual applicants, applicants may appeal their award determinations or denials that are contingent on Program policies. However, it should be noted that NCORR does not have the authority to grant an appeal of a statutory or HUD-specified CDBG-MIT requirement.

11.5 Public Notice, Comment Period, and Website

A comment period of at least forty-five (45) days, as required by HUD, shall be provided for citizens, affected local governments, and other interested parties an opportunity to comment on the initial draft and subsequent substantial amendments to the Action Plan.

In accordance with CDBG-MIT requirements, NCORR has developed and will maintain a comprehensive website regarding all disaster recovery activities assisted with these funds. NCORR will post all Action Plans and amendments on the NCORR's CDBG-MIT website at <http://www.rebuild.nc.gov/mitigation>. The website gives citizens an opportunity to read the plan and to submit comments. This website is featured prominently on, and is easily navigable from, NCORR's homepage. NCORR will maintain the following information on its website: actions plan, any substantial amendments, all performance reports, citizen participation requirements, and activities/program information that are described in the action plan, including details on contracts and ongoing procurement opportunities and policies, including opportunities for minorities, women and other disadvantaged persons, veteran, and other historically underutilized businesses (HUB). Paper copies of the Action Plan Amendment will be available in both English (including large, 18pt type) and Spanish as needed at applicant service centers. Applicant service center locations are found at the ReBuild NC website at <https://www.rebuild.nc.gov/information-assistance>.

After the conclusion of the required comment period, all comments shall be reviewed and the State will provide responses to the comments. The State's consideration on all public comments can be reviewed in Appendix A.

Upon approval of the State's Action Plan, HUD will provide the State an action plan approval letter, grant terms and conditions, and grant agreement. Upon receipt of the grant agreement, the State will review and begin the process of executing the grant agreement with HUD.

11.5.1 Contact Information

Interested parties may make comments or request information regarding the Citizen Participation Planning process by mail, telephone, facsimile transmission, or email to NCORR.

Comments and complaints may be submitted as follows:

- Electronically to the NCORR CDBG-DR website: <http://rebuild.nc.gov>.
- Written comments may be mailed to:
North Carolina Office of Recovery and Resiliency (NCORR)
PO Box 110465
Durham, NC 27709
- Email comments: info@rebuild.nc.gov.
- By telephone for those hearing impaired: (984) 833-5350, TDD 1-800-735-2962
- By Fax transmission: (919) 405-7392

NCORR will post this and all Action Plans and amendments on the State's CDBG-MIT website at <https://www.rebuild.nc.gov/mitigation> to give citizens an opportunity to read the plan and to submit comment(s). Please provide comments to NCORR directly at (984)-833-5350 or publiccomments@rebuild.nc.gov. At the conclusion of the public comment period, all comments will be reviewed and the State will provide responses to the comments. The State's consideration of all public comments can be reviewed in Appendix A. Following submittal by NCORR of the Action Plan to HUD, HUD has a review period to consider and approve the Action Plan. The State estimates that this Action Plan will be submitted to HUD on or before December 30, 2019. Copies of the Final Action Plan will also be available upon request. The State estimates that HUD's review period shall conclude on or before February 28, 2019. Upon approval by HUD, a final version of this Action Plan will be posted on NCORR's website.

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Appendix A: Response to Public Comments

In some instances, public comments are abridged to focus on the specifics of the comment. Where commenters revealed private information, that information was removed from the public comment to protect the commenter's identity.

Comments that were specific to the ongoing CDBG-DR funded recovery were referred internally for additional review and direct response.

Robeson County Public Hearing

1. **Comment:** Each public school must be dual purpose, shelter and have the capacity to be self-energy sufficient, such as a backup generator or natural gas.

Response: Ensuring that shelters are safe and prepared for disaster is an important part of the disaster cycle. There are many opportunities for the State to maximize its shelter infrastructure, such as through FEMA Public Assistance or Hazard Mitigation Grants. NCORR believes that funds for these projects are available and will pass these concerns to the North Carolina Office of Emergency Management for review.

2. **Comment:** Use some of the money to get CERT's (Community Emergency Response Teams) trained in every town in Robeson County. Buy necessary equipment if needed.

Response: Community Emergency Response Teams are an important part of the disaster recovery process. Currently there are 57 North Carolina counties with active CERTs. If a need for additional CERT programs is identified in the most impacted and distressed areas, a funding opportunity may arise in the future or through other programs.

3. **Comment:** My suggestion is instead of lifting the dirt raise the houses in the green zones along the river, make them affordable. \$1,000.00 is not affordable that is almost 3 months of income for many households. Cement slabs on metal or concrete poles make them small enough for small families put carports to raise cars off the ground and put in parks and picnic table and other activities under the house, have inflatable boats on sides of the houses to get out after the storm if flooding occurs. Put solar panels on the houses to hold people over until flooding goes down. Beautify the river and each zone can have a theme with parks, golf carts and activities.

Response: Structural elevations with CDBG-MIT funds is an eligible activity and was strongly considered by the NCORR team. However, structural elevations still present mitigation challenges and do not fully protect residents from the impacts of flooding. NCORR will

continue to fund elevation projects through the Hurricane Matthew CDBG-DR and will consider it for funding for Hurricane Florence CDBG-DR funds.

4. **Comment:** I represent the town of Maxton, North Carolina. I came here not having the clearest idea what this is about. I do understand as far as mitigation, I'm just learning that we have some flooding in Maxton. I started in August and I wasn't here for Hurricane Matthew or Hurricane Florence, but I am aware now that there was some flooding in Maxton and they closed one of my schools in the area, and one of the areas this we like to focus on is that. She was giving her ideas and there are people looking for ways. I saw on the slide show that you're looking at implement areas or I call them implement, if you can strategically place ponds to catch the runoff. I don't know how you would do that, but I think that might be a form of mitigation. It might help solve some of the problems. We do have a situation in Maxton. We are a poor community without a lot of resources. And we just need anything you can afford us. I understand that there were areas hit a lot harder than Maxton and probably would drive money away but we want you to keep us in mind in this process and come visit us and help us out anyway you can. Thank you.

Response: NCORR reviews the needs of both large and small communities for potential CDBG-MIT funding. NCORR has released the survey to impacted jurisdictions and intends to continue to coordinate with many communities on their recovery needs, using both CDBG-MIT and CDBG-DR funds.

5. **Comment:** Rowland is a small town and we currently have several (inaudible) projects and we applied for COG funding for those types of grading improvements and we would like to continue to see the resources for infrastructure projects and drain improvements if possible. With the drainage improvements, we would like to see ways of the drain and the sidewalks to have the walkways included for future mitigation so when they are go down the road and one other item we would like assistance, and I don't know if this falls under NCORR or not, but the financial aid of these projects and the typical project is like \$750,000. Our town budget is about twice that. So we don't have the wherewithal and the funding to sign a contract to do these types of improvements, even if I break these projects up in several phases, it's the funding becomes a problem because to sign a contract, you have to have the funds in hand. I'm trying to look into how to get the funds allocated so we can sign these contracts to do the project right. Not only immediately fixing the drainage problems but long range because Rowland down the road, because we are going to have other hurricanes and we are going to have more flooding. We won't get any hills in Rowland. I can tell you. But the funding aspect, we can get assistance with the state and some guidance and the any money you can put toward infrastructure, we would appreciate it. Thank you.

Response: Funding major infrastructure is a major hurdle for many smaller communities. NCORR will review the infrastructure recovery need with CDBG-DR funds to ensure that the infrastructure need is being met.

6. **Comment:** First, I would like to say thank you for taking the time out to hear us and get to present in front of the committee. I have the kids from the youth from the (inaudible) program are all here. I would like to say on behalf of my community and kids just like them, in my opinion, first of all, really good job with everything that you presented so far. I kind of agree with some of it and some of it, but I will give you my comment later. For now, the two things that I think is very important for our community moving forward, we already understand that each year, our hurricane season is between the dates of June 1st and November the 30th. So you already have that in mind, and I think the two things we should focus on to add to our community is, first, a resilience hub, cater to the youth, long-term recovery stuff and everything that comes in, it's pretty much adult generated, and they run it. So in my opinion, if we could just put together some type of resiliency like hub for the children because they are our tomorrow, and if we can implement like stem programs, teach them coding and things like that, they can get the information out to the adults quicker. If you can find the ability to do this that is not in a floodplain and the roof can support solar panels, that would be lovely and that would be great. Also, it would be-- you know, a lot of times with in our communities--sorry about using my notes. It makes it quicker. A lot of the people within our communities, they don't really have time for the resources to prepare with survival kits or to prepare the things that they may need, so in that, we can put together programs and things like that in that resiliency hub, where the information can come from, that can be part of the kids' work, whatever. Also, we need one other thing, wellness parks. I think a wellness park and I looked at a few. I did my time in the lobby and I can't go into detail where they were, but if you could have wellness parks for the kids, and it will help with the collection of the water and help with the stormwater collection and it will keep it out of the communities and only in the park. Also wind, how do we pay for stuff moving forward? We can have our kids build aquaponics farms and raise their own fish and raise their own funding and when a storm comes we he will have all the resources we need through the resiliency hubs and our wellness parks. Thank you.

Response: Educational aspects of hazard risk are a State priority in the State Hazard Mitigation Plan. NCORR will review educational opportunities through other funding sources, such as with NCEM, to see how educational projects may be funded in the future.

7. **Comment:** I have been through Floyd, Matthew programs. One comment I would make, I understand it's a big process but anything to be done to expedite funding. Matthew happened in October 2016. This is October 2019. We have folks that have not received one penny, and I know that's not necessarily NCORR's fault because you guys are a new agency, but anything you can do to advocate for that money to get out on the street quicker, I think,

very important. Now for housing authority, I would not do my job if I did not advocate for the public housing funding and we will receive CDBG to replace units. We lost 267 units in Matthew. We have 99 units back online and we have 168 units that we lost in 2016. That's important to us because we serve low income senior citizens and disabled individuals. Right now, we have a thousand people on our waiting list. So the need for affordable housing is there. So I just want to make sure that the mitigation session going on that the restoration fund is there for the ones that is there to see the fund and we operate the section 8 program. We have 968 vouchers and we have 528 leased. We have 70 people walking the streets of Robeson County who can't find a landlord to rent to them with such a lack of affordable housing, they can charge \$800 for a single wide that's run down. So they're not going to serve our program. So what I want to do is to echo that public housing and the thing about public housing is if you talk about housing, people say that's wonderful. If you talk about authority, people say those are good, but the moment you put those two together, now it's negative all of a sudden we don't have subdivisions, we have project. I'm here to tell you we don't have projects we have subdivisions. We want to make sure that you guys go back and you talk about how this \$168 million and I know it's a big pot of money and there's a lot to be done. I want to advocate for the public housing restoration fund to know that the housing authority still has 168 units that need to be replaced. The CDBG program is going to help us and the DR program will help us out with a lot of those, but we still have 96 units that we hope mitigation can help us out. Thank you for this opportunity.

Response: NCORR has heard the need for affordable housing units and particularly the support that public housing authorities need in developing safe and resilient housing options. NCORR also understands the need to expedite delivery of service, which is why a majority of NCORR proposed projects in this Action Plan are intended to quickly address the mitigation need.

8. **Comment:** I'm a community advocate and I'm here primarily for houses of faith, whether or not mitigation funding can be used to assist houses of faith, and in whatever way that can be done when you're looking at your mitigation, and that's basically it.

Response: Houses of faith may participate in CDBG funded activities, but CDBG funds cannot be used to support any inherently religious activities, such as worship, religious instruction, or proselytization.

9. **Comment:** I'm a resident of south Lumberton as well as a member and one of the founders of seeds of hope CDC and CRC. We're a registered organization with the North Carolina secretary of state. I would like to thank you for taking the time out to come to Robeson County first and listening to our concerns and it really means a lot. Since October 2016, we the members in Lumberton and Robeson County have come together and worked tirelessly

to keep the neighborhood vitality on the forefront. We have operated a free store for survivors where churches and local agencies donated items and we did cleanups with the city's waste management. We had worked with the North Carolina rural center to start a navigation conference about disaster. We partnered with local ems to have community emergency response trainings for our members. We've had North Carolina State, UNC - Charlotte, and the environmental defense fund come to our rescue to help us get some quantitative and qualitative analysis about our local resiliency efforts. I feel like a CDC and a DRC is needed in the community as a constant and local in the community, and I have been saying this since Matthew. A CDC and a DRC that becomes inclusive and can provide information on the ground. It can keep communities informed when there's blue sky or disaster. They can create access to services and facilities faster, stay abreast of the health measures and environmental practices. They can keep cooperative partnerships at a promotion and try to enhance a sense of belonging, cohesion, and identity while we deliver economic capacity. I really feel that we need a multi-resource agency that operates year-round because what we found is that whenever one problem comes, we-- the members try to go and all try to rush to bring it back and another problem comes, we try to go and remedy that. If we have a consistent operating CDC and DRC, we're able to move faster. We cannot give a local prognosis without a local diagnosis of the disaster symptoms. I feel like we should be able to implement the principles of the emergency management, whole practice of community principles and being able to coincide and flow with what the state is doing. So-- thank you all again.

Response: NCORR will review funding opportunities for local community centers and resources with CDBG-DR funds.

- 10. Comment:** I'm also a trained researcher and been working in disaster recovery since Matthew. I am going to read this and I will be glad to put my writings and submit them before the deadline. My question is, who decides what neighborhoods and what floodplains will be protected and saved? Who decides which ones will be targeted for a buyout program? Many of us are of the opinion that west of south Lumberton and Mayfair and all the communities in Lumberton and the floodplains could be mitigated and reconstructed and saved. The residents in our low-income communities, particularly are engaged in re-visioning and reconstructing their communities and they will be forced to take a buyout and in reality, buyout program is not voluntary and it becomes a sellout program not a buyout program. So what we really need is to come up with principles and practices of social justice and j-u-s-t, and there's a new term called climate gentrification and it's not just on the coast but and it's moving inland and taking over from the areas and it is also happening in our inland rural communities where rural areas are just basically are in floodplains or being neglected and the design and development and mitigation is occurring less in those and in the more wealthy communities and I'm concerned about the buyout program and I'm concerned that we're not discussing the rebuilding of affordable housing programs in

communities that can be protected from flood, but are in the floodplain so we don't lose our churches, our businesses, our schools and particularly our minority voting districts as well. Thank you.

Response: NCORR endeavors to be thoughtful about the ramifications of buyout and acquisition of property. Before confirming buyout areas, community stakeholders and residents will have the facts about the buyout program and will be important drivers of buyout areas. NCORR has modeled its buyout priority areas (DRRAs) based partly on interest in buyout, ensuring that areas that are approached for buyout are those that demand it. To offset the strain that buyout can put on affordable housing stock, and to ensure that people remain near their neighborhoods, the buyout program will be complemented by affordable housing development.

- 11. Comment:** Hello, I have a concern for an area that I have a house in West Lumberton. Everything that's been said tonight, I don't disagree with it because I don't know that much about the concern that this mitigating has to be used for and how it would be used. I don't know that much about planning of the areas and all that. But my concern is and one reason I have the concern is that I lived in West Lumberton for a lot of years and I still have a house there. My children went to school in West Lumberton. There's a nice, little school there and it's no longer being operated. It will never be operated again according to the decisions that have been made by the public schools of Robeson County and that's gone. There are probably 100 or more houses in West Lumberton that were rental properties and they are no longer occupied, and those houses, the owners probably can't afford to redo them, so what's going to happen to West Lumberton? Is it going to become mostly a green area? Is it going to become a ghost town in that part of the city? And this reemphasizes some of what the previous speaker had a concern for. Is it mostly going to be a thing of the past? Is West Lumberton going to disappear because all of these residents that left two years ago, the majority cannot come back. So you know, what's been said is probably well and my concern is that something can be done for housing in that area along with the green areas. So that the area is not a ghost town in that area. Thank you.

Response: NCORR will be working to include incentives in buyout awards so that areas that choose buyout will be incentivized to remain in place, to the greatest extent possible. NCORR will remain sensitive to the needs of individuals and communities participating in the buyout and acquisition process.

Edgecombe County Public Hearing

- 1. Comment:** I believe that the mitigation funds should be used to update the existing water and sewer lines/system within Princeville proper prior to additions in new locations, to raise existing homes/businesses/town buildings above the flood level along with safe and realistic

entry points or to build new homes/businesses above the flood risk level, and to preserve the heritage, culture, and historical significant of Princeville through rebuilding and sustaining the Princeville Museum and historic buildings .Funds should also be used to establish and implement a sustainable plan for protecting the elementary school from future flooding events.

I also believe that the mitigation funds should be used to re-ditch the entire town including installation of new culverts for each drive way. This would allow for adequate draining and assist with future heavy rains and flooding. Could re-ditching canals or water ways help alleviate high cresting points? What research has been completed on re-ditching projects in the area? Would a project such as this qualify under guidelines set out for the grant?

If it is deemed unachievable to raise homes to a height that could withstand drastic flooding, individuals should be given the option to relocate, and not only to the 53 acres that was purchased for development. For the lots that have homes that will be removed and not rebuilt, these areas should become available for community gardens and green spaces, creating an environment that promotes self-sufficiency and takes advantage of the open spaces available without leaving homes and individuals vulnerable to another flooding event.

Over all I hope that the mitigation funds can be used to secure the future of Princeville while putting into place proactive initiatives to ensure the safety and wellbeing of the citizens.

Response: The continued survival of Princeville as a community is a major priority for NCORR. NCORR has met with community ambassadors, stakeholders, and decision makers to ensure that buyout is approached thoughtfully and in the most needed areas. Some major infrastructure projects in Princeville are not feasible with the amount of CDBG-MIT funding available. NCORR will continue to work with its partners in recovery and mitigation to coordinate on a mitigation approach that works hard to preserve the town.

2. **Comment:** We need to rebuild Public Housing (Princeville Housing Authority), new location on 52 acres, higher ground.

Response: NCORR will evaluate PHA needs, including the needs of the Princeville Housing Authority.

3. **Comment:** These funds should be used in an effort to prevent future flooding in Princeville, Edgecombe County, and Eastern N.C. The dike in Princeville needs to be enhanced at an approximate cost of \$26 million. A reservoir should be built upstream to capture runoff after storms, to prevent it from reaching Eastern N.C. We are never flooded during the storm, but we are flooded from water flowing from upstream. Millions of dollars have been spent

rebuilding after storms, let's become proactive by enhancing our dike and building a reservoir.

Response: Infrastructure improvement projects may be funded through other means, such as FEMA Public Assistance. NCORR will review comments with organizers of other funding, such as NCEM, to determine if FEMA assistance is available for those projects. Additionally, CDBG-DR may be able to fund infrastructure projects in coordination with CDBG-MIT projects.

4. **Comment:** Thank you so much. I have visited the tables out front and I'm pleased to know that you are doing something for preventative measures, so that is very important for us. I guess my first question or comment is in regard to the flood insurance. I was looking at something else on the table in regard to that. we do know that a lot of our citizens cannot afford the flood insurance, so we are trying to find out what measures can be taken or what can be done to assist or aid in being able to get affordable flood insurance for our citizens?

Response: NCORR encourages local jurisdictions to participate in the Community Rating System (CRS) program to reduce flood insurance premiums. Some NCORR activities, such as buyout, may increase the CRS rating for local jurisdictions and allow for a reduction in flood insurance premiums.

5. **Comment:** First of all, I want to thank you all for what you are doing and you're the new kids on the block. We have been to a lot of meetings out here and hearing same old thing, but I'm so glad to hear that you are willing it do what we call intervention processes because if we don't do that, there's no need inviting anybody to come into our area where we would be if it's not safe, and that's the first thing on my list is make sure that we can do the intervention program where people can know that they're going to be safe to raise their children and to open their businesses in a dry place instead of the bottom of a river. Thank you.

Response: NCORR will continue to prioritize long-term measures with CDBG-MIT funds to ensure that vulnerable communities remain safe during a disaster event.

6. **Comment:** Yes, what I'm hearing according to the fliers that have been passed out is telling people seemingly to buy out and go for a buyout and then you would get some money. You got around \$300 million available, \$268 million. You could take one million dollars out of that proposal from the government and give the number of people that buyout is available. If you want to buyout, do it. There's no restriction on the buyout. The buyout given and you can do the buyout and needs something done and has insurance to get back home. The home is his castle and taking a little time and looking at this flier that has been put urging people to go for the buyout and get the money. Take a million of that \$168 million and give every individual that has applied for getting back home, the mayor, some of the commissioners, give them some money, a lot. I got a book in my hand here. A book in my hand that I want to present to

the town here tonight and its principle recovery plan after the '99 flood when it was completely destroyed. That was back in the years' time. Government turned loose some of money. Gave everybody at least \$10,000 or more, so you could get back in the house. Now, it takes three times that in order to get most of those that have applied for funds, if you got the money, give it to them. How many, 75 or more. You can take \$1 million and divide it among the number of people that have applied to get back home from the man down, he can move back and what would that come to? Maybe we would give them \$10,000. I'm not worried about that, give me half a million and what happens, you might have to give him \$50,000. That's what he needs and everybody who knows who applied you will be back home in less time than ten months. If you can get back there with \$10,000 in the '99 flood and here's Matthew on the covered two streets and a half, Matthew, you can't get back home? Give him some money. You got it. Give him some money so he can get back home.

Response: NCORR will outline in the buyout program a set of incentives to make sure that individuals are able to locate new, affordable, and decent housing after choosing the buyout option.

7. **Comment:** Yes, I'm interested in making a comment concerning preventing damage. I'm concerned because for me and a community living on cowlick creek, every time the Tar River overflows, it ends up in our houses. Now, when Floyd occurred, we were told, oh, that's the 100-year event. Don't worry about a thing. Okay. Well, in 15 years, houses along there have flooded three times. Now, my house happens to be one of those houses that has flooded three times from three different events, but there are others that live on this creek that have the same issue. And it doesn't have to be a storm. All it needs is for the Tar River to overflow. And that can come from just water flowing down the river based on an event that happened west some place. So my concern is trying to prevent that from happening again, either rerouting cowlick, reengineering cowlick. My neighbors and I don't have to worry about it ending up in our houses, or buying us out and giving us a way to figure out what organization is doing this buyout. I mean, cause from what I'm understanding there's five or six different organizations that could be doing this that we don't know anything about. But getting the information to those homeowners so that they can get the right information for a buyout. Thank you.

Response: NCORR will continue to share information on the buyout program so that individuals can make informed decisions about participation in the program.

8. **Comment:** Yes. Meant I stay on the cul de sac on First Street and Princeville. The county do not want to take responsibility. The state don't want to take responsibility. Princeville does not want to take responsibility. No one wants to take responsibility for that one little section of highway. It is so bad down there, people are tearing up their cars. Nobody wants to drag that one section. Nobody want to pave it. Nobody want to crush down, nothing. That's unfair

to us. We have to pay for the trucks to come down and pick up the trash and stuff. Those heavy trucks are tearing up the road just as well. To me, I don't feel it is right, that they can't drag the highway, that little section. I feel like they have the money. Princeville with all these changes in hand, the money got spent. Everything in Princeville is paid except for that one little section. If they don't want to pave it, the least they can do is keep it drug.

Response: The purpose of the CDBG-MIT funds is to perform mitigation activities to help prevent future storm damage. This may be an issue of current storm damage. NCORR will review to determine if other funding sources are available for this issue.

9. **Comment:** I'm the chairperson of Princeville Housing Authority Board, and I'm here advocating for public housing. We have 50 units public and 4 marketing and I'm asking that some of that \$168 million be given to Princeville Housing Authority so we can relocate on the new 52 acres higher ground and we won't get flooded again, and in this area, we do need affordable housing because of the demographics, because of the economics. And I'm advocating, please, please rebuild Princeville Housing Authority with some of that money, and we have a very good managing agent, Mr. Larry Wood, who sits on the housing authority, and they're very experienced in building and doing the infrastructure. So as soon as we get some money, we can rebuild and bring some of our citizens back, and also this rebuild is on higher ground where we're farther from the river. Thank you.

Response: NCORR will review funding the Princeville Housing Authority with a dedicated allocation of PHA funds.

10. **Comment:** Thank you for this opportunity to speak. I reside in southeast Rocky Mount where we received a lot of damage from the storms. There is a lot of properties that have not been rebuilt because the people are unable to afford the repairs. The streets were flooded. The storms were filled and houses were ruined. People were displaced. It may not have been as bad as Princeville, but we were still affected in the same manner. We ask that you consider giving southeast Rocky Mount some of the moneys that's been allocated to help rebuild the community and the people's lives and restore some dignity to that area. Thank you.

Response: NCORR will assess both the disaster recovery and long term mitigation needs for Rocky Mount.

11. **Comment A:** Good afternoon. Thank you all for coming down and giving Edgecombe County an opportunity to be heard. I heard you all say earlier that this was a new plan. I don't have a problem with new plans. What I have a problem with for three years, what have you all been using as a guide to address Matthew? For three years now, and I feel like it's time for somebody to stop bewitching people and put yourself in these people's positions. Majority of the people in Edgecombe County are the have-nots, and when you are a have-not and you

get hit with a disaster, you don't have the luxury of moving on. You are paralyzed right there where you are until you get help! These people need help. They needed help for three years and to come pussy-footing three years later with another plan?! You go back and tell the governor he ought to be ashamed of yourself with some ---- like this.

Comment B: Good evening. I want to thank everybody for the opportunity. I have a lot to say. Three minutes won't allow me. I want to piggyback off the two gentlemen. I'm very dissatisfied. It's been three years. I still have not got any money. I think all the moneys must be going toward salaries to people that don't know half as much as I know and I have a big problem with that. It's great to get this money but we need a better system on how to allot it because the people that are affected are not the ones that are receiving the money. I'm waiting to go back and hopefully, I will get some answers. I just found out that there's a new handbook with rules. I don't understand how we can change after three years and now they're saying, you know, there's things that are different than what we were told in the beginning. But I do want to say the local Edgecombe County girls-- you all know who you all are-- if it was not for you all, I don't know where I would be right now. I have called them many times and they always respond because they're really the only ones I can count on right now. I'm very dissatisfied. It's great to have a plan. Pray we never have future storms, but if it's going to take three years, a lot of people can't wait that long. I still don't have any answers. I have an award letter over there that means nothing to me if I can't get anybody to get it going. I just don't know. I'm kind of getting hopeless but I hope after tonight, I'm going to get some answers and in the future, just like tonight, the local girls told me about this meeting. I did not receive a phone call, email, text, or letter. It was that I stopped in there and they were the ones that told me about being here tonight. So this cannot go on. We have to stand unified. Come together, and fight for what is right. Thank you, again, for the opportunity to speak, and thank you for the local Edgecombe office. Thank you.

Comment C: As others have stated, we have been waiting, wait, waiting, which we thought once they start checking everybody's name, whoever have the buy, everything would be in order and on time. But it have not been. It don't seem like nobody cares anymore, or if the money had been going to other floods that have been happening or is going to continue on with other floods happening. Is the money going somewhere else? We need help. I have never seen nothing like this. I have been in two floods. Almost got drowned in the 1999 and now in 17 years, we had another one, Matthew, and FEMA quickly stated that I read in Matthew saying that after our town had been flooded twice, they wasn't going to help that town anymore. So we wonder, what we're going to do next? Another flood got to happen before we even get anything? Which I did move because in '99 flood, I had to jump up and down, after the '99 flood, jumping up and down wondering what it's going to flood again. That is nerve-racking, causes a lot of us to be stressed out, anxiety, on medication, mentally and then when we try to get houses now, trying about new plans, how can you continue on changing something when we have no hope. First, we have hope and then you take it away

from us making us still feel stressed out with anxiety and we don't know how long we're going to be here? People are dying left and right. We do want to have some enjoyment out of. This I understand what you're talking about, but time shouldn't matter after what we've mattered. Time shouldn't matter. We have been through a lot. Still, I come out here and I want answers and still not getting any answers. Now, they had told me I had done went to the process. Went I finished going through the process, they sent an award letter. I said this doesn't pertain to me. I went for the buyout. I had to call to see where to meet next. We shouldn't have to go through all of this. This is too much. It's time for somebody to wake up.

Comment D: I have been in Princeville since I was 18 years old. I am now 75 years old. I have not seen anything happening in Princeville like it is today. I love Princeville. I had many chances to leave Princeville, but after I became to love it, I decided not to and I wanted to fight for it. My house flooded in hurricane Floyd completely. They had to rebuild our home and they moved the house back further across the land and now the land has shifted. I never had flooding before, but when Matthew came along, my house flooded over half, about three-thirds of my house flooded. Now, I had a raised-- I was one of three houses on 2nd street that had a red on their house. I didn't get back into how house until February and it is still not completed up to today. They're still coming, just today, and still working on my house. I'm very disgusted with the way things has gone about. I've had letters that said I would receive money and different other things, but yet when I go to the meetings and different other things, I have been denied and said, well, you don't qualify. But yet, I'm 80 and I'm a double amputee and I qualify according to their guidelines, but then they tell me that there are other people who come before me. I need help from Princeville. The water flows out of my neighbor's backyard from over by Morning Street on that down across to my land, and now the land has shifted. Never before has that land been like that, but since that flood, they came and they dug a little trench, but when Matthew came the water still didn't go in the trench. It came up in my yard and flooded my house and my car, which I didn't get paid for. So, yes. I am one of the ones who have to pay the \$400 for the flood insurance. I only get social security and I don't have any help. My husband is deceased, and I want to know when will Princeville begin to help the citizens of Princeville? Thank you.

Response: In selecting CDBG-MIT funding priorities, NCORR focused on activities which can be rapidly implemented and serve a use as a disaster recovery source as well as a long-term mitigation activity. NCORR will work hard to move CDBG-MIT funds expediently to impacted individuals and to serve the best use in long-term mitigation in a timely manner.

- 12. Comment:** I would like to say that if you could save some funds for people in the future would come give them money to give them gas and buy things. Because a lot of people have low budget and for myself, I can say that I repair myself, buy food and gas go high, there's no gas in the gas station. So if you can come and get bigger, you can have funds to help those people who have no income to help them and move forward and move out because I know a lot of

people stay home because they cannot afford to buy gas and stuff and have the ability. That's all.

Response: This does not appear to be a CDBG-MIT eligible activity, but NCORR understands the challenges in disaster recovery this can present to impacted individuals. FEMA provides Individual Assistance for disaster recovery items such as this.

Craven County Public Hearing

- 1. Comment:** I'm a 26-year resident of Fairfield Harbor in craven county. Fairfield Harbor is, for those who don't know, across the Neuse River. We're primarily a boating and golfing community. Primarily a golfing and boating community. So a part of our infrastructure are a number of canals that lead from the Neuse River straight up behind homes and there are boats and docks there. So one of the things that I noticed as I was going through the tables is canals and ditches are suggested. What happened to us in hurricane Irene and Hurricane Florence is those very same ditches and canals were a conduit for water to come from the Neuse River up into the homes and flood our area. So as I'm going and looking at some of the suggestions being made, I would comment that ditches and canals are a double-edged sword. They both take water in and bring water in. In the 26 years we've lived there, we had flooding several times. We lost duct work under the house and then in Hurricane Irene, we had water in the garage. We lost-- I lost my workshop, about \$20,000 worth of equipment that was my job, and then in hurricane Florence, we had 30 inches of water inside the house. We applied for substantial damage letter which was required because our damage exceeded 200% of our tax value and we're waiting in the FEMA program for assistance to raise the house. Until the house is raised, we're not allowed to get a perm from it the county to do any further work within the house. So, I would comment that anything that can be done to expedite the raising of houses, even though that's not specifically what this program is for, would be greatly appreciated by the residents not only of Fairfield Harbor but the community. I know that in our community alone, at least 50 homes have been abandoned at this point by people who simply could not wait. One of the things that occurred to me as I was speaking to the folks here is that many of the slews that are being proposed would begin immediately or in a relatively short time. We want to improve the infrastructure, you're looking at putting in ditches and these things can be done within two years, maybe 20 years at the most. But we're a generational community. We have many people who have children, living with parents, living with grandparents in our community and I know that's the case throughout our town. This is the place where people stay for generations. I wonder how much of this money is going to be focused on looking further ahead than 20 years to 50 years, to 100 years or 200 years and I urge that you spend that money wisely and looking further ahead. Thank you.

Response: The intent of CDBG-MIT funds is to plan and implement projects and programs that have a far reaching affect, looking into the future and anticipating changing community

needs. NCORR commits to implementing projects with a long useful life and that are responsive to the long-term needs the community.

2. **Comment:** I live in New Bern in the historic district. During Hurricane Florence, we noticed that some of the stormwater drains and drainage systems that are under our streets in New Bern began to collapse and we've had a problem with that and the town is actively trying to restore some of those things and it's very costly, but can any of this money be the voted--devoted toward helping our town repair some of those under-the-street drains that are collapsing and then causing dangerous situations, large openings in our streets that happened when a car passes over? We've had some of our streets had holes as big as 15 feet in diameter that just opened up and it took quite a lengthy process to restore that structure. Can that money be used to help the city of New Bern in its process of repairing some of the stormwater drainage?

Response: NCORR will review funding opportunities for storm damaged infrastructure through other sources, such as CDBG-DR or FEMA Public Assistance funds.

3. **Comment:** I don't know how the funds can be used in our community but one of my hopes would be that funds could be used for long- term visioning and a plan for the craven county, Eastern North Carolina, so that we don't do most activities and spend money for good things, all of them, I know, they would be good things individually, but without a long-term, sustainable plan I worry that we will have-- that we'll be here again next year and the year after having same kind of public comment, wondering about what we can do and I think that money well spent is systemic and long term. So thank you for the opportunity to speak before you tonight.

Response: CDBG-MIT funded projects will be forward-looking and intend to address long-term resiliency issues in affected communities.

4. **Comment:** I'm with the Middle East Commission out of Beaufort County and we service five counties, but prior to that, hurricane during May, my background is hazard mitigation. I worked for the county for almost 10 years, and I agree with everything that each one of the previous speakers have said and I do not mean this as criticism. What I'm getting ready to say is not criticism because I know what a tedious and arduous process this is. But having said that, something has got to be done to expedite this process quicker. I have houses in Beaufort County that are going up in the air as we speak this week that I started talking to these people in 2013. This is 2019. People should not have to wait two, three, four years. Either give an answer and expedite the process or tell them we can't help them. Because I was a Realtor before this for 20 years. The most personal thing that you can get involved with is somebody's home. That is the most personal part of their life. And when their home is destroyed, when it's damaged, when they can live in it but they live in it in fear and when you start talking to

them about a possibility of elevating it, they get so excited to be out of that fear, and when you have that conversation with them and you take an application only for them to then realize, this is so far-- this is so far out. I have had people flood waiting to be elevated. So, this is not meant as criticism. This is just a plea and NCORR, I think, is trying to do that and I applaud Director Sprayberry for his efforts in doing that. I hope that it works. Thank you.

Response: CDBG-MIT programs will be developed in a manner that allows quick, transparent delivery to participating individuals to relieve the burden of long waiting times for assistance.

5. **Comment:** I am from Jones County and I live in Pollocksville. I want to make this one big request that some of the some of the mitigation funds be used to clean out the Trent River as it runs through Jones County because it's because of that river flooding that we lost the town of Pollocksville, basically the whole town is up for sale today as a result of-- places that had never flooded before, same type of flooding took place in Trenton, North Carolina. They are coming back a little bit faster, but still, we have lost one community in that town completely, and it's due to the lack of cleaning out the river. I think if you're going to do any mitigation in Jonestown, please clean all the Trent River. For a smaller concern, there are pockets all over Jones County that suffered flooding based on where they're located, and we do not have the county planner as such, but we need one. And if there are funds in that large sum of money that can be used to hire Planners to go into counties and to help them to look at how do you make a comeback? Where do you appeal? And how do you save your county? A lot of people don't want to leave. They have lost their homes. They have nowhere to go but they don't want to leave their county. And so they're caught between living in a house that is not livable or going somewhere among strangers that they don't know and they're too old to feel like they can be comfortable. That's another issue. And a third smaller issue. I live on Sermon Lane right off Highway 17. I can complain about the ditch that runs by house and I complained about that because it takes the water from both sides of 17 and it runs across Sermon Lane to go nowhere but flood us and when you go to DOT they say they don't have any help. That they have cut their staff in half. So there's no one to do the work. If this money can be used to raise up the staffing of DOT in these small communities so they can clean out the ditches, again, a real cause of flooding and then if you have any money left you can build some new houses in Pollocksville. Thank you.

Response: Environmental remediation projects such as river clean up appear to be outside of the use of CDBG-MIT funds. However, there are funds available for some of these projects. NCORR will coordinate with other sources of funds to determine if another funding source may better suit the needs for an environmental cleanup and/or culvert clearing project.

6. **Comment:** I am from Brunswick County. Yes, I drove 97 minutes to be here because it was that important to me. Three comments. One is that your money is supposed to be spent to help people who are 50% of the area median income, which is LMI. You cannot help them

if they don't know what you're talking about. So, I submit to you that the first thing you need to do is educate. The second thing is I agree with this lady right here. One of the most important things that you can do is get involved with someone's home. That's why you need what already exists. Your money comes from HUD. Isn't it amazing that HUD created a whole network of housing counseling agencies, simply because they understood that in order to really help people, you had to be a face-to-face contact with them. So as much as I love your case managers-- and I do-- they can't sit in Raleigh and help me someone in Brunswick County, but I sit in Brunswick, Columbus, and Pender. I know where Burgaw is, I know where the new road is and I know where ash is and I know where quarters are. You have to be on the ground in rural communities in order to help them. You can do what you're doing in Raleigh and that would be great. We don't live in Raleigh. Lastly, if you were going to do mitigation, then you really, really have to first start thinking about the name that you have in your name, which is resiliency. You can't continue to take money and buy trailers and think you're going to help somebody get-- because you're giving them somewhere to stay. They need more than that. They need to know that when their house, something happens that they can gut it and put it back together, if necessary. I submit to you, I don't have any control of the money because if I did we would all have it. You need to understand that if you're going to build affordable housing, then we need to use the best techniques, the best information, and the best practices. We don't need to go back and do something that we did 20 years ago. It doesn't work.

Response: NCORR will consider this feedback in the implementation of its CDBG-DR programming. New investment in proper case management located near recovering communities is a major priority for CDBG-DR implementation. These case managers will ensure proper education of the individuals they are helping to manage through the recovery process.

7. **Comment:** I work with Craven County in the planning office and I have with me this Evening, one of our county commissioners. We're here to talk about some of the things that we have a tremendous amount of need for in the county. One is to try to move forward to assist the folks that have requested assistance through hazard mitigation. Most of the people that we currently have are kind of waiting until a determination can be made, can they qualify for acquisition, elevation or buyout, so that's an important thing that we try to move forward with. A lot of people are in limbo and they're displaced. We also have a tremendous amount of need within the infrastructure of our buildings in the county, such as our school systems, our jails, and our well sites. We need some type of emergency operation capability with generator power. We also need additional backup in our emergency operation center. We have a huge 50 kw generator, but if that generator fails, we will have a severe problem. Our well sites are another problem where we cannot have those fail, and we need to do something other than have portable generators that we place up there that we constantly have to fuel, you know, in extended events like we had during Florence, it was very difficult

to be able to-- we actually had to have folks that would be on standby to be there constantly during the event to keep those things up and running. At our schools, that became very interesting because we lost power for so many days, some parts of The County were without power for 10 or 12 days. So as a result of no power, the mold and mildew took over and in some of the schools, it took upwards of eight months before we could actually reoccupy those schools and take care of the mold. We also have our emergency operations center. We need some type of floodwalls to prevent water from going underneath that operation so we can continue to operate from there, and we have a couple of really primary roads in the county, which is Adams Creek Road, with are we need to elevate the road, itself, and we have over 2,000 residents. They can't get in or out. Every time we get a nor'easter or a hurricane, we have another section of road called Pinenet Road, a similar situation. Wouldn't take much to elevate that roadway. It's a very short distance and lastly, stream debris. That's a big plus if we could get additional moneys to go and clean out the debris from Matthew and Florence.

Response: NCORR will continue to prioritize communication and coordination with sister agencies, such as NCEM, to ensure that recovering communities and those seeking mitigation funding receive assistance and consistent communication to relieve the waiting period for receiving assistance. NCORR will also coordinate with other agencies to ensure that funds are available for those CDBG-MIT opportunities that are not funded.

8. **Comment:** Good evening. I am from Edgecombe County. I just want to make a couple of brief comments. As far as future planning, I think it's very apparent that the model that we are using is no longer relevant to the situation that we're facing in this era of catastrophic storms. Only thing I would say somebody said, well, let's project 10, 20, 200, 50 years down the road and somebody else said, but we don't have a planner in our county. I think that you have to deal with the reality of where skills and staff capacity is and some of the lowest wealth counties in our region, and you have to start there. If we are going to do future planning, I think there ought to be training before we step into that. The other thing that I want to say is I think we need a balanced approach. For me, people come first, and the first thing is to figure out what are the needs for housing especially because, yes, they have been displaced and they've been displaced for a long time and people are angry. They're very angry. They don't understand all this stuff about HUD had to write a new program for what you're saying. This is a new hazard mitigation. They're not in that dialogue. All they know is that they've been sitting there and there's no money and there's not enough resources to help them to survive and nobody seems to care about them. So, I would really push for a balanced approach. That was one of the things that bothered me about the way this is set up that you are going around station to station, but you don't have any idea of what the guidelines are or how much money is there going to be for this or that. But I'll end with emphasizing a balanced approach to make sure we don't look so far into the future that we leave these people stranded where they are now because there's really no safety net down in this region. Thank you.

Response: Implementation of CDBG-MIT projects will involve local planning to ensure that projects are consistent with local plans. NCORR will also prioritize mitigation of housing as a primary need for CDBG-MIT funds.

9. **Comment:** The concern that I have is in the western part of Craven County, there are many creeks where beavers have built dams. So therefore, it causes a lot of flooding and from the storm, you have several older people whose houses the foundation is cracking. FEMA can't help. Small business can't help. So we need to look at trying to make sure that these homes are stable, as well as people who are renting. They really don't have places to go. We need to figure out how to get the renters finances to rebuild their property so that people will have places to live.

Response: Rental property will be primarily addressed through the implementation of CDBG-DR programming, but CDBG-MIT funding will address some affordable rental issues such as Public Housing Authority support and multi-family development.

10. **Comment:** I just have been listening to everything here. I'm going to repeat a few things, but I think that's important. I know from the stickers you're putting on your survey out there, the number of stickers make a difference. The more a comment is made, the more difference it makes. The first thing I would like to say is we realize that the people that are sitting here are not the people who made the decisions as to whether or not you have the money, whether the money is here for Matthew or Florence or when it's coming. I would encourage you to give the feedback up the chain. I worked in corporations for a long time, and I currently work on a government grant and even in that situation, I find it very necessary to get the feedback up. Even if you feel like nothing will happen. I do get something out of getting, but if you don't say anything, nothing will ever change. So, my comment is just to encourage you to take what we're saying and share that and your own frustrations with the grant and how it's organized to give the feedback up the food chain. I see information out there about building new houses, new rental, things of that, moving people out of floodplains and I would like to also emphasize the other part that you had there which is to make sure that those transported, if you will, communities have their infrastructure for groceries and other basic needs and transport to get one place to another, because it certainly wouldn't help a community to be moved someplace else and not have access to grocery stores. With regard to speeding up the process, I would like to add my sticker to that same concern. Because that is-- it's trauma, and the waiting And thinking something is going to come along and you're not going to make this choice that another person made because something may come, that can be quite nerve-racking. I guess the other thing-- another thing I want to encourage you for the counties that have no planners to maybe-- I know there's a mention of hiring Someone and maybe you can think out of the box and think about whether another county can be given some funds to partner and to shepherd and take that other county under their wing. That might be a solution to trying to find and hire and train and all that kind of thing. So, please, think out

of the box. And then add to the list of roads that can use some attention, I think broad creek road floods an awful lot, too, from storms and that might need to be looked at in terms of how to mitigate that kind of thing. So that road which is the only way in and out for many, many people could have some attention. Thank you all.

Response: NCORR will provide this feedback to HUD so that these concerns may be heard. NCORR also remains committed to supporting holistic new development and ensuring new housing development includes the infrastructure needed to thrive.

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